TECHNICIAN UPDATE

Passenger Safety

Texas AgriLife Extension Service

in cooperation with

Texas Department of Transportation

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

Speakers

Beth Warren
Safety Programs
Texas Department
of Public Safety

Allana Pinkerton
Child Passenger
Safety Advocate
Diono

Sarah Tilton
Child Passenger
Safety Advocate
Britax USA

Bev Kellner
Program Manager
Texas AgriLife
Extension Service
Passenger Safety

MythBusters

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Passenger Safety

AgriLIFE EXTENSION

MYTH

Correct angle for rear-facing infant only seat is 45 degrees.

Passenger Safety

AgriLIFE EXTENSION

FACT

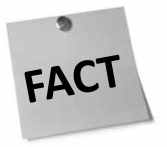
- Rear-facing seats can be installed at an angle of 30-45 degrees depending on manufacturer's instructions.
- Always read instructions and follow manufacturer's level indicator.

Passenger Safety

AgriLIFE EXTENSION

MYTH

The most dangerous part of child using a lap/shoulder belt when they do not fit is the shoulder belt rubbing on a child's neck.



- There is little, if any, evidence in the literature of cervical spine (neck) injuries resulting from poor positioning of the shoulder belt near the child's neck (in situations where the child's head does not strike anything in the vehicle).
- A shoulder belt that touches the side of the neck is not likely to cause injury unless the belt is very loose.
- Cervical spine injuries may occur when no shoulder belt is used – making head injuries more likely.

www.TheCarSeatLady.com

MYTH

Car seats can never be used in RVs.

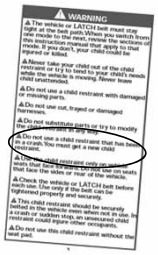
FACT

- Yes, seatbelts and child restraints can be used in an RV.
- Always check in the owner's manual.
- Never use a CR facing sideways.

MYTH

A car seat should always be replaced after a crash.

FACT



- Follow NHTSA guidelines AND CRS manufacturer's recommendations.
- Almost all manufacturers recommend replacing a seat after a crash.

MYTH

In some new Fords with inflatable seat belts, you will be able to disconnect the shoulder belt to install a CR.

Passenger Safety

AgriLIFE EXTENSION

FACT

- The Inflatable Seat Belt has two retractors - one for the shoulder portion and one for the lap portion.
- Both the lap and shoulder portions are permanently attached to a single latch plate.
- The lap belt portion is equipped with a locking retractor for securing a child restraint, but the shoulder belt cannot be disconnected to use the lap belt only.

Passenger Safety

AgriLIFE EXTENSION

MYTH

Boosters should always be used in school buses.

Passenger Safety

AgriLIFE EXTENSION

FACT

- Most school buses equipped with lap/shoulder belts have adjustable shoulder belts.
- Do not use a booster seat in a school bus with adjustable shoulder belts.
- Booster moves child forward, reducing excursion room in seat compartment.

Passenger Safety

AgriLIFE EXTENSION

MYTH

LATCH is slightly safer than seat belts.

Passenger Safety

AgriLIFE EXTENSION

FACT

- Both LATCH and seat belts are equally safe.
- Use the system that provides the most secure fit.

Passenger Safety

AgriLIFE EXTENSION

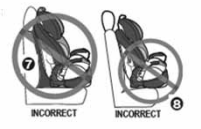
MYTH

The Graco Nautilus must always make contact with 100% of the vehicle seat.

Passenger Safety

AgriLIFE EXTENSION

FACT



- When using the Nautilus in the booster seat mode, the front of the seat must not hang over the front of the vehicle seat.
- When using the Nautilus in the harness mode, follow the 80/20 rule.

Passenger Safety

AgriLIFE EXTENSION

MYTH

When a convertible label reads "<u>Use ONLY in a REAR-facing position when using it with an infant weighing less than 20 pounds</u>," make sure to advise parents to stop using it after 20 pounds.

Passenger Safety

AgriLIFE EXTENSION

FACT

- Don't be mislead! This is language required by FMVSS 213.
- All convertible seats go rear-facing until at least 30 lbs. Most go to 35 lbs. Many go to 40 lbs. and now some go to 45 lbs.!!!

Passenger Safety

AgriLIFE EXTENSION

MYTH

European car seats that have all the labels and have the same brand name as those sold in America are legal to use in the United States.

- **Example: Maxi-Cosi seat sold in Europe**

Passenger Safety

AgriLIFE EXTENSION

FACT

- It's not legal to use seats that are not approved by NHTSA. European seats are not approved.
- NHTSA only grants waivers for imported seats under extreme circumstances, and not wanting to buy new seats will not qualify.
- Must use seat that is labeled with "Meets FMVSS 213 standard." State laws base correct use on the instructions for the seat, using FMVSS 213 as the standard.

Passenger Safety

AgriLIFE EXTENSION

MYTH

Tether straps are ALWAYS routed under head rest.

- Consult vehicle manual. If no direction is provided, it is usually routed under the head restraint.
- When using a Britax versa-tether without specific guidelines from the vehicle manufacturer, route the tether so that it travels to the designated tether anchor location in the most natural route.
  - If the V of the two pieces of webbing routes best and most natural connecting to the designated anchor point “around” the head restraint – then go around.

MYTH

When using LATCH, the unused lap/shoulder belt cannot be buckled behind the safety seat.

FACT

- To prevent possible strangulation issues, some manufacturers recommend fastening the seat belt behind the CR before installing it.
- Make sure the belt buckle does not interfere with the installation of the lower attachments (LATCH).
- Consult manufacturer's instructions before using this method.

Passenger Safety

MYTH

There should never be more than one seat attached to a tether at a time.

Passenger Safety

FACT

- Many pickup trucks with tether routing loops will allow this.
  - Refer to vehicle manufacturer's instructions.

Passenger Safety

MYTH

Lower anchors are always attached with the open part of the hook facing downwards.

At least one booster seat manufacturer (Diono, formerly Sunshine Kids Juvenile Products) recommends that the opening of the hook face upwards. This is because the lower anchors, when available, on a booster do not bear the weight of the child, just the weight of the booster seat itself.

- Positioning it with the hook opening facing upwards is for ease of use. Do not do this with lower anchors when connecting a harnessed seat.
- Always read instruction manuals.

MYTH

If a CR has a built-in lock-off on both sides of the CR, both should be used.

FACT

- Some manufacturers may recommend using both lock-offs; others may select one or the other.
- Review the CR's instructions to know which lock-off to use and whether the lap belt alone or the lap-and-shoulder belt is threaded through the lock-off.
  - Manufacturers developed lock-offs to make pre-crash locking easier.

Passenger Safety

AgriLIFE EXTENSION

MYTH

A child outgrows a forward-facing harnessed seat when they have less than 1" from the top of their head to the top of the shell.

Passenger Safety

AgriLIFE EXTENSION

FACT

- That is true for rear-facing seats.
- For most forward-facing seats with harnesses, the child outgrows the seat when the mid-point of their head (usually the top of the ears) is over the top of the shell, or the child's shoulders are above the top slots on the seat.

Passenger Safety

AgriLIFE EXTENSION

FACT

This concludes the Myth Busters section of the update!

Passenger Safety

AgriLIFE EXTENSION

CPS Industry Hot Topics

Occupant Detection Systems, Inflatable Seat Belts, Seat Belt Extenders, Tether Routings, Vehicle Head Restraints, Low Speed Vehicles (LSV)

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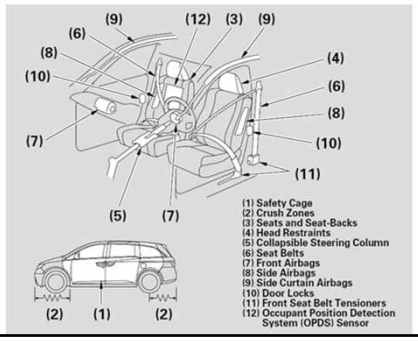
Vehicle Safety Features



(1) Safety Cage
(2) Crush Zones
(3) Seats and Seat-Backs
(4) Head Restraints
(5) Collapsible Steering Column
(6) Seat Belts
(7) Front Airbags
(8) Side Airbags
(9) Side Curtain Airbags
(10) Door Locks
(11) Front Seat Belt Tensioners
(12) Occupant Position Detection System (OPDS) Sensor

2011 Honda Odyssey

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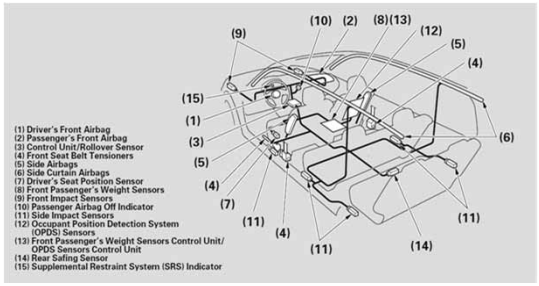
Airbag System Components



(1) Driver's Front Airbag
(2) Passenger's Front Airbag
(3) Control Unit/Rollover Sensor
(4) Front Seat Belt Tensioners
(5) Side Airbags
(6) Side Curtain Airbags
(7) Driver's Seat Position Sensor
(8) Front Passenger's Weight Sensors
(9) Front Impact Sensors
(10) Passenger Airbag Off Indicator
(11) Side Impact Sensors
(12) Occupant Position Detection System (OPDS) Sensors
(13) Front Passenger's Weight Sensors Control Unit/ OPDS Sensors Control Unit
(14) Rear Safing Sensor
(15) Supplemental Restraint System (SRS) Indicator

2011 Honda Odyssey

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2010 Honda Odyssey

Do not spill any liquids on or under the seats, cover the sensors, or put any cargo or metal objects under the front seats.

Make sure the floor mat behind the front passenger's seat is properly positioned on the floor. If it is not, the mat may interfere with the proper operation of the front passenger's seat and its sensors.

Hanging heavy items on the front passenger seat, or placing heavy items in the seat-back pocket.

Second-row passengers should not wedge objects or intentionally force their feet under the front passenger seat.

The passenger's advanced front airbag system has weight sensors under the seat. Although Honda does not encourage carrying an infant or small child in front, if the sensors detect the weight of an infant or small child (uo to about 65 lbs or 29 kg), the system will automatically turn the passenger's front airbag off.

A second row passenger pushing or pulling on the back of the front passenger's seat.

Moving the front seat forcibly back against cargo on the seat, the floor behind it, or a folded second row seat.

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2009 Chevy Malibu

CAUTION: (Continued)

Even if the passenger sensing system has turned off the right front passenger frontal airbag, no system is fail-safe. No one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off.

Secure rear-facing child restraints in a rear seat, even if the airbag is off. If you secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.

See *Passenger Sensing System on page 1-66* for additional information.

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2010 Honda Accord EX-L

In the AAB section page 26:

Although Honda does not encourage carrying an infant or small child in the front, if the sensors detect the weight of an infant or small child (up to about 65 lb or 29 kg), the system will automatically turn the front passenger's airbag off.

In the Protecting Children - General Guidelines section page 34:

Never put a rear-facing child seat in the front seat of a vehicle equipped with a passenger's front airbag.

Page 38: ***Rear-facing Child Seat Placement***

A rear-facing child seat can be placed in any seating position in the back seat, but never in the front. ***Never put a rear-facing child seat in the front seat of a vehicle equipped with a passenger's front airbag.***

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2010 Chevy Traverse

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Even if the passenger sensing system has turned off the right front passenger frontal airbag, no system is fail-safe. No one can guarantee that an airbag will not deploy under some unusual circumstances, even though the airbag is turned off.

This Vehicle is Equipped with Advanced Air Bags

Even with Advanced Air Bags

- Children can be killed or seriously injured by the air bag.
- The back seat is the safest place for children.
- Never put a rear-facing child seat in the front.
- Always use seat belts and child restraints.
- See owner's manual for more information about air bags.

BF6989

Printed in USA 21996989

To be removed by customer only.

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2011 Kia Soul

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⚠ WARNING
For proper operation of the occupant detection system, do not place any items cumulatively weighing over 2.2 lbs (1kg) in the passenger's seatback pocket.

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Can a CRS touch the vehicle seat back in front?

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"If you are unable to use the center rear seating position and have to install this child restraint directly behind a front vehicle seat, ensure that there is at least 1-1/2 in. (38 mm) of space between any part of the child restraint and the vehicle seat that is closest to the child's head. This space may be necessary for the child restraint to properly perform in certain types of crashes."

Evenflo Discovery™5

Using the Discovery Handle
To change handle positions, squeeze both red handle releases and rotate the handle to the desired position until it locks in place.
Carry Position*
Convenience Position*
Handle Release
Car Position
Stand Position
*Do not use the "Carry" and "Convenience" positions while traveling in a vehicle.

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Discovery™ 5 User Guide, Page 3, General Warnings

Can a CRS touch the vehicle seat back in front?

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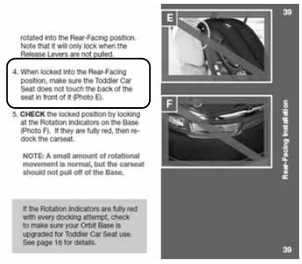
rotated into the Rear-Facing position. Note that it will only lock when the Release Levers are not pulled.
4. When locked into the Rear-Facing position, make sure the Toddler Car Seat does not touch the back of the seat in front of it (Photo E).
5. CHECK the locked position by looking at the Rotation Indicators on the Base (Photo F). If they are fully red, then re-dock the carseat.
NOTE: A small amount of rotational movement is normal, but the carseat should not pull off of the Base.
If the Rotation Indicators are fully red with every docking attempt, check to make sure your Orbit Base is upgraded for Toddler Car Seat use. See page 16 for details.
E
F
Rear-Facing Installation
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www.orbitbaby.com

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Can a CRS touch the vehicle seat back in front?

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2012 Lexus ES 350

Child restraint systems installed on the rear seat should not contact the front seatbacks.

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Pretensioners

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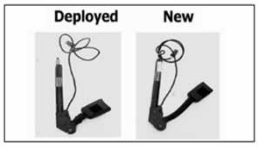

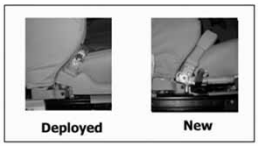

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What seating positions have pretensioners and/or load limiters?

Audi A4 / S4	Audi A6 / S6	2011 Honda Odyssey	2011 Chevy Cruze 2011 Chevy Tahoe
Pretensioners 1 & 3 Load Limiters 1,3,4,5,6	Pretensioners 1,3,4,5,6 Load Limiters 1 & 3	Pretensioners 1 & 3 No load limiters	Pretensioners 1 & 3 No load limiters

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Safe and Secure | Inflatable Rear Safety Belts

Can the Inflatable Safety Belts be used to install a child restraint?

Defer to **BOTH** vehicle and child restraint manuals.

2011 Ford Explorer
2012 Ford Flex and 2 unnamed Lincoln models
Toyota added to 2012 Lexus LFA (standard front seat feature, made by Takata)

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2011 Ford Explorer

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Inflatable Seat Belts

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Can I use an inflatable seat belt to install a CRS?

- **Technicians must take time to read and understand the vehicle and child restraint manufacturer's instructions and research their websites for updates on this new technology. Contacting their customer service departments is also a very good idea if you or the caregiver has any questions.**
- This tip sheet provides several child restraint manufacturer policies regarding the inflatable seat belt
  (August 1, 2011 CPS Express)

Submitted by Kim Herrmann, Safe Kids Worldwide (Ft. Myers, FL)

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2011 Ford Explorer

The rear inflatable safety belt consists of the following:

- An inflatable bag located in the shoulder safety belt webbing.
- Lap safety belt webbing with automatic locking mode.
- Seat mounted buckles with gas generators concealed under the seat cushions.
- The same warning light, electronic control and diagnostic unit as used for the safety belts.
- Impact sensors located in various parts of the vehicle.

SAFETY RESTRAINTS FOR CHILDREN

See the following sections for directions on how to properly use safety restraints for children. Also see *Airbag supplemental restraint system (SRS)* in this chapter for special instructions about using airbags.

Note: The rear inflatable safety belts (if equipped) are compatible with infant and child safety car seats and belt positioning booster seats. For more information on the rear inflatable safety belt system, see *Rear inflatable safety belt* in this chapter.

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Pre-crash locking seat belts will lock in one of two places: the latch plate or the retractor.

Chapter 4: Seat Belt Systems with Pre-Crash Locking Features – Page 42

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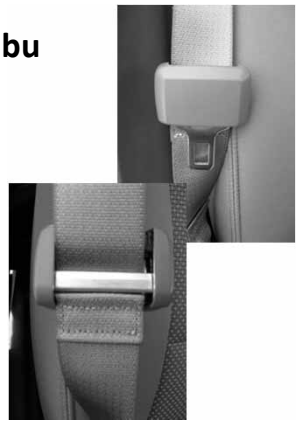
2011 Chevy Malibu

Dynamic Locking Latch Plate

- Locks only under dynamic crash loading
- CRS should **not** be installed without locking the retractor!



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GM Introduces Industry's First Front Center Air Bag

Buick Enclave, GMC Acadia, and Chevrolet Traverse midsize crossovers in the 2013 model year

http://www.gm.com/content/gmcom/home/article.content_pages_news_us_en_2011_sep_0929_airbag.gm.html

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2009 Chevy Tahoe

Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt is not long enough, your dealer/retailer will order you an extender. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. To help avoid personal injury, do not let someone else use it, and use it only for the seat it is made to fit. The extender has been designed for adults. Never use it for securing child seats. To wear it, attach it to the regular safety belt. For more information, see the instruction sheet that comes with the extender.

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2009 Chevy Tahoe

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Should top tethers be routed around, over or under a vehicle head restraint?

2. If the child restraint manufacturer recommends that the top tether be attached, attach and tighten the top tether to the top tether anchor, if the vehicle has one. Refer to the child restraint instructions and the following steps:
   - 2.1. Find the top tether anchor.
   - 2.2. Route, attach and tighten the top tether according to your child restraint instructions and the following instructions:

If the position you are using does not have a headrest or head restraint and you are using a single tether, route the tether over the seatback.

If the position you are using does not have a headrest or head restraint and you are using a dual tether, route the tether over the seatback.

If the position you are using has an adjustable headrest or head restraint and you are using a dual tether, route the tether around the headrest or head restraint.

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2011 Chevrolet Silverado 2500

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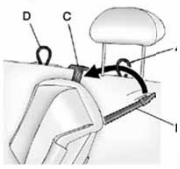
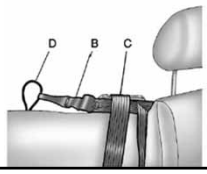
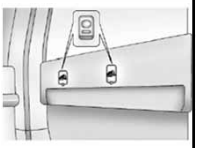


Crew Cab

Crew Cab Shown, Extended Cab Similar

2012 Sierra 1500





Regular Cab

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2011 Ford Expedition

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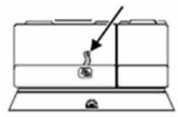
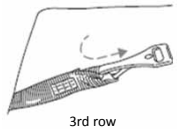
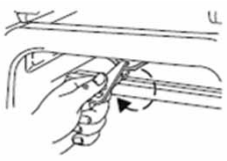




3rd row



2nd row

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2010 Chevy Traverse

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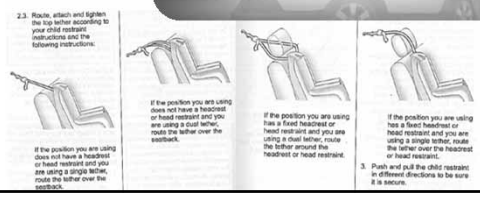
"If the child restraint has a top tether, follow the manufacturer's instructions regarding use of the top tether."


2.3. Route, attach and tighten the top tether according to your child restraint instructions and the following instructions.
If the position you are using does not have a headrest or head restraint and you are using a single tether, route the tether over the seatback.
If the position you are using does not have a headrest or head restraint and you are using a dual tether, route the tether over the seatback.
If the position you are using has a fixed headrest or head restraint and you are using a dual tether, route the tether around the headrest or head restraint.
If the position you are using has a fixed headrest or head restraint and you are using a single tether, route the tether over the headrest or head restraint.
3. Push and pull the child restraint in different directions to be sure it is secure.

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2011 Dodge Journey

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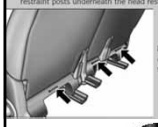
Installing The Top Tether Strap (With Either Lower Anchors Or Vehicle Seat Belt):

- Attach the tether strap to the anchor directly behind the seat where you are placing the child restraint, being careful to route the tether strap to provide the most direct path between the anchor and the child restraint, preferably between the head restraint posts underneath the head restraint.
- Remove all slack and tighten tether strap according to child restraint manufacturer's instructions.

NOTE: Ensure that the tether strap does not slip into the opening between the seatbacks as you remove slack in the strap.



Installing The Child Restraint Using The Vehicle Seat Belts

- To install a child restraint, first, pull enough of the seat belt webbing from the retractor to route it through the belt path of the child restraint and slide the latch plate into the buckle.
- Next, extract all the seat belt webbing out of the retractor and then allow the belt to retract into the retractor. Finally, pull on any excess webbing to tighten the lap portion around the child restraint. Any seat belt system will loosen with time, so check the belt occasionally, and pull it tight if necessary.
- Route the tether strap to provide the most direct path for the strap between the anchor and the child seat, preferably between the head restraint posts underneath the head restraint.
- Attach the tether strap hook of the child restraint to the tether anchor and remove slack in the tether strap according to the child restraint manufacturer's instructions.

68

2010 Honda Ridgeline

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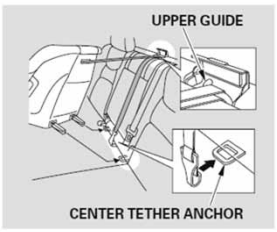

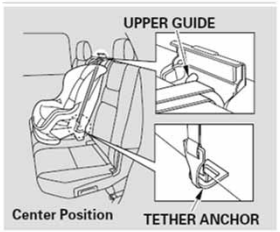

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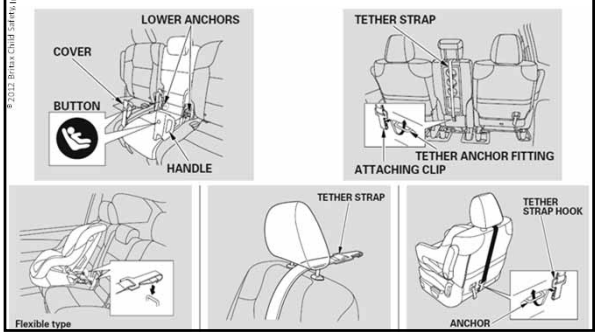
2011 Honda Odyssey



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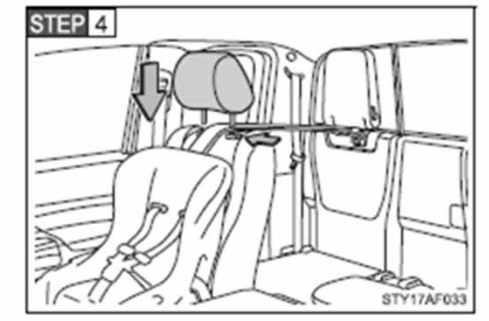
2009 Toyota Tacoma Access Cab



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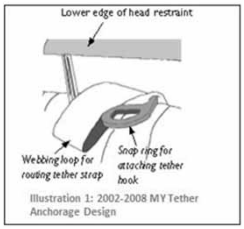
Dodge Trucks

2009 2500/3500 Ram Trucks "Heavy Duty"


Lower edge of head restraint
Webbing loop for routing tether strap
Snap ring for attaching tether hook
Illustration 1: 2002-2008 MY Tether Anchorage Design

- 2009-2011 Ram 1500 Quad or Crew Cab Trucks
- 2010-2011 Ram 2500/3500 Crew Cab Trucks
- 2010-2011 Ram 3500/4500/5500 Quad or Crew Cab Trucks
- 2010 across the board webbing loop

2012 Chrysler 200 Convertible

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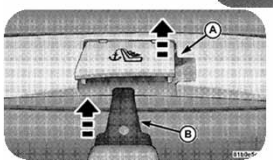
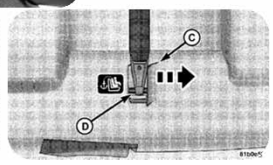
Route the tether strap to provide the most direct path from the child seat to the anchor.





Can a CRS be installed in this vehicle?

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74

What is a LSV?

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- CRS are certified for use in motor vehicles and aircraft.
- A motor vehicle is a vehicle that is driven or drawn by mechanical power and manufactured **primarily** for use on public roads.
  - passenger car
  - multipurpose passenger vehicle
- Both of these classifications exclude low-speed vehicles.

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2011 Dodge Journey

- The Integrated Child Booster Seat is located in each outboard second-row passenger seat.
- 48 – 85 lbs.
- 47 – 57 inches tall

To position a child:

- Slide second row seat to the full rear position to use the integrated Child Booster Seat.
- The second row bench with the Integrated Child Booster Seat must remain in the full rear position during use.

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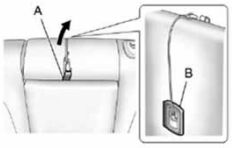
What does this look like? Would I use it to install a CRS?



Armrest Retaining Strap

- Vehicle glove box when new
- Use to secure center armrest before installing RF child seat in center position

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Seat Belt Entanglement

It is always okay to buckle the vehicle seat belt behind a LATCH installed CRS to prevent the potential of strangulation?

A. Yes, Always
B. No, Never
C. Maybe
D. Check BOTH the CRS and Vehicle manual

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2010 Honda Accord EX-L

Make sure any unused seat belt that a child can reach is buckled, the lockable retractor is activated, and the belt is fully retracted and locked.

79

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2011 Volkswagen Golf

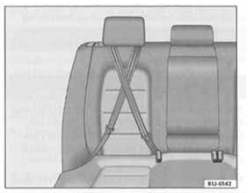

Fig. 65 Routing of unused center rear seat safety belts when installing a child restraint with the standard safety belt in an outboard seating position.

- Never activate the switchable locking retractor when routing the safety belts around the head restraints.
- Guide the belt webbing behind the head restraint of the adjacent seat (fig. 66). When doing so, do not engage the switchable locking feature on the safety belt! You should not hear a "clicking" sound when the safety belt is retracting.

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Nissan

If a child has an unused seat belt within reach:

- Buckle unused seat belts. Pull the seat belt out all the way to the end without yanking. Then, feed the excess webbing back into the retractor.
- If a child seat is installed with LATCH, consider completing the steps above before you install the child seat. Always consult your child seat and vehicle owner's manual for installation instructions.

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Can the retractor be locked in booster mode?

Booster seat installation

⚠ CAUTION

Do not use the lap/shoulder belt in the Automatic Locking Retractor mode when using a booster seat with the seat belts.

Refer to all Warnings and Cautions in the "Child Safety", "Child Restraint" and "Booster Seats" sections before installing a child restraint.

Follow these steps to install a booster seat in the rear seat or in the front passenger seat:

⚠ CAUTION

■ **When installing a booster seat**

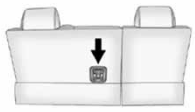
Do not fully extend the shoulder belt to prevent the belt from going to ALR lock mode: (→P. 61)
ALR mode causes the belt to tighten only which could cause injury or discomfort to the child.

82

2011 Nissan Altima and 2012 Lexus ES 350

'c. All rights reserved

2011 GMC Acadia



Third Row

The third row has one top tether anchor located at the bottom rear of the center seatback. This anchor should be used for the center seating position only. Never install two top tethers using the same top tether anchor.

Do not secure a child restraint in a position without a top tether anchor if a national or local law requires that the top tether be attached, or if the instructions that come with the child restraint say that the top tether must be attached.

According to accident statistics, children and infants are safer when properly restrained in a child restraint system or infant restraint system secured in a rear seating position. See *Where to Put the Restraint on page 3-55* for additional information.

http://gmownercenter.yahoo.com

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What accessory base will work with the SnugRide®?

Infant Car Seat	Works with which car seat base(s)?
SnugRide® (weight rated to 22lbs)	Only with a SnugRide® base that is rated to 22lbs
Infant SafeSeat™	Infant SafeSeat™ base, SnugRide® 30 base, SnugRide® 32 base, or SnugRide® 35 base
SnugRide® 30	Infant SafeSeat™ base, SnugRide® 30 base, SnugRide® 32 base, or SnugRide® 35 base
SnugRide® 32	Infant SafeSeat™ base, SnugRide® 30 base, SnugRide® 32 base, or SnugRide® 35 base
SnugRide® 35	Infant SafeSeat™ base, SnugRide® 30 base, SnugRide® 32 base, or SnugRide® 35 base

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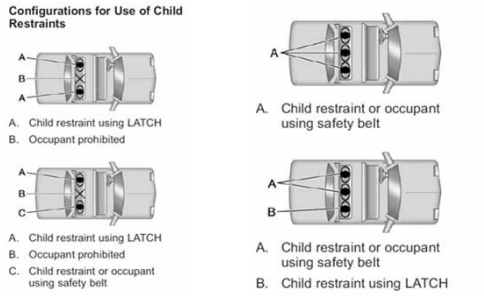
2011 Chevy Equinox



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How do I explain to a parent it is important to use a top tether?

A top tether can reduce the distance that the child's head moves forward by 4-6 inches and can thus lessen the risk of head injuries in a crash.

Head injury is the leading cause of vehicle crash related deaths for children ages 0-12 (www.chop.edu)

"For FFCR, the analysis suggests that upper tethers are a crucial component in the prevention of head contact with the vehicle front seat or dash. In fact, when the upper tether is not used, the results predict that **head excursion values will be large enough to allow head contact with these structures**,..." **QUANTIFYING THE RELATIONSHIP BETWEEN VEHICLE INTERIOR GEOMETRY AND CHILD RESTRAINT SYSTEMS**
C.P. Sherwood, Y. Abdellilah, J.R. Crandall – University of Virginia

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CPS Student Manual Pg. 81

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Department of Transportation's Federal Aviation Administration (FAA)

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http://www.faa.gov/passengers/fly_children/

Cares Child Airplane Aviation Restraint System

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- Aviation Child Safety Devices (ACSD)

89

http://www.kidsflysafe.com/

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This child restraint system conforms to all applicable Federal Motor Vehicle Safety Standards. This Restraint is Certified for Use in Motor Vehicles and Aircraft.

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http://www.usairways.com/en-US/traveltools/specialneeds/children.html

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Does CRS and vehicle always agree?

2006 Toyota Tacoma 91

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2006 Toyota Tacoma 92

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2011-2012 Toyota Tacoma 93

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NHTSA Priority Plan

- www.regulations.gov
- Docket number SA-2009-0108

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Begin a search by choosing a task or entering a keyword
search for a proposed rule
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search for a final rule
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Regulations.gov is your source for U.S. government regulations and related documents. On this site you can find, read and comment on documents. Share your knowledge and make your voice count.
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Open for Comment/Submission
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Search
Advanced Search
Browse By Topic

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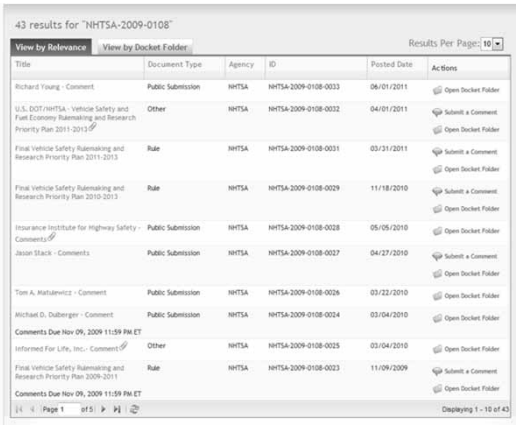

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2011-2013 Rulemaking and Research Priority Plan

- Child Restraints in Side Impacts
- Vehicle-CRS Fit Program
- Rear Visibility of Vehicles and Power Windows
- Boosters
- Lower Anchors and Tethers for Children
- Test Requirements

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- WWW.nhtsa.gov/cars/problems/comply

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Smartphones!

98

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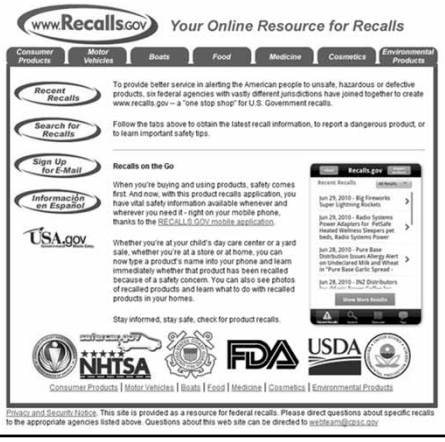
www.Recalls.gov
Your Online Resource for Recalls
Consumer Products
Motor Vehicles
Boats
Food
Medicine
Cosmetics
Environmental Products
Recent Recalls
Search for Recalls
Sign Up for E-Mail
Información en Español
USA.gov
To provide better service in alerting the American people to unsafe, hazardous or defective products, six federal agencies with vastly different jurisdictions have joined together to create www.recalls.gov -- a "one stop shop" for U.S. Government recalls.
Follow the tabs above to obtain the latest recall information, to report a dangerous product, or to learn important safety tips.
Recalls on the Go
When you're buying and using products, safety comes first. And now, with this product recalls application, you have vital safety information available whenever and wherever you need it - right on your mobile phone, thanks to the RECALLS.GOV mobile application.
Whether you're at your child's day care center or a yard sale, whether you're at a store or at home, you can now type a product's name into your phone and learn immediately whether that product has been recalled because of a safety concern. You can also see photos of recalled products and learn what to do with recalled products in your homes.
Stay informed, stay safe, check for product recalls.
NHTSA
FDA
USDA
Consumer Products | Motor Vehicles | Boats | Food | Medicine | Cosmetics | Environmental Products
Privacy and Security Notice. This site is provided as a resource for federal recalls. Please direct questions about specific recalls to the appropriate agencies listed above. Questions about this web site can be directed to

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Car Seat Helper

Phoenix Children's
Injury Prevention Center
Car Seat Helper
Motor vehicle crashes are one of the most common causes of preventable deaths of children. Using a safety seat drastically reduces a child's risk of injury or death.
Choose the right seat
Browse all car seat types
Surprising car seat facts
Get help installing your car seat
ABOUT

http://www.phoenixchildrens.com/

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QR Codes

http://qrcode.good-survey.com/

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Child Passenger Safety Smartphone Videos

INSTRUCTIONS

1. Load a QR Reader App onto your Smartphone.
2. Start the QR Reader App.
3. Scan the code on this card with your Smartphone.

Or, type the URL below the code into any Web Browser.

Safe Kids Maine

Video: **Safe Kids USA Child Passenger Safety Week 2010**
9/21/10
1 minute, 36 seconds
Learn about what happens at a Safe Kids car seat checkup event.

Video: **Rear-facing vs. Forward-Facing Animation**
10/08/10
1 minute, 6 seconds
See an animated crash test of the differences between rear-facing and forward-facing car seats.

Video: **AAP Policy Change: The Car Seat Lady**
3/2011
3 minutes, 3 seconds
Listen to a Pediatrician discuss the revised AAP policy statement on the safe transport of children.

Video: **Booster Seat Safety and Use Story**
6/19/08
3 minutes, 49 seconds
Use a booster seat and leave no room for regret.

05/2011

Thank you!

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Sarah Tilton
Child Passenger Safety Advocate
Britax Child Safety, Inc.
Direct Line (704) 409-1695
Email: Sarah.Tilton@Britax.com

15 Minute Break

Communicating Extended Rear-facing to Parents

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

Why Rear-Facing?

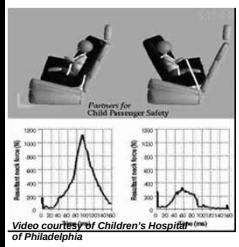
- **It's 5 TIMES SAFER than forward-facing.**
- **Even for 2 year olds!**

www.TheCarSeatLady.com

Source: Henary B, et al. Injury Prevention 2007

Passenger Safety

Why Children Should Travel Rear-Facing



Video courtesy of Children's Hospital of Philadelphia

Increased crash protection:

- Spreads crash forces along the entire head, neck, and back
- Protects head, neck, and spinal cord
- CR absorbs forces of crash

Passenger Safety

AAP Recommendations

- Minimum – one year **AND** 20 lbs.
- New Research 2008

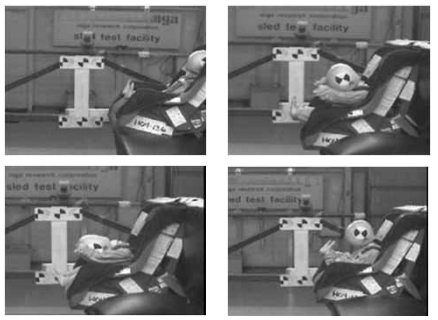
  Rear-facing to age two or more is 5 times safer.
- AAP Statement April 2011

  Infants should ride rear-facing until they reach the highest weight or height limit recommended by the manufacturer of the CSS.

Passenger Safety

AgriLIFE EXTENSION

12-month-old Forward-Facing

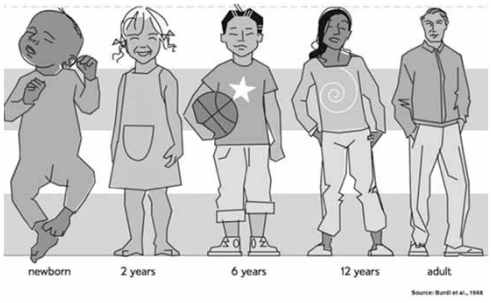


www.TheCarSeatLady.com

Passenger Safety

AgriLIFE EXTENSION

Younger Child's Head is Larger in Proportion to Body



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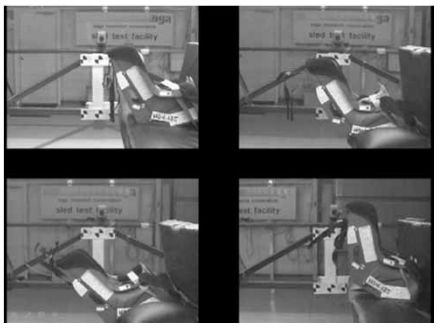
Passenger Safety

AgriLIFE EXTENSION

12-month-old Rear Facing



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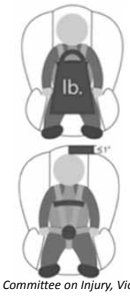
Passenger Safety

Rear-facing Until Age 2 (At Least!)



Too Heavy

Usually 35-45 pounds

Too Tall

Head less than 1 inch below top of seat

AAP Committee on Injury, Violence & Poison Prevention. Pediatrics. 2011
Watson E, et al. BMJ. 2009

www.TheCarSeatLady.com

Passenger Safety

Reasons Drivers Chose Forward-Facing

Table 1. Reasons Drivers Chose Forward Facing Direction for a Child Younger Than 2 Years

Reason Driver Chose Forward Facing Direction	Percentage Response
Child is at least one year	70
Child "outgrew" the RFCSS	63
Child weighed too much for the RFCSS	61
Child's feet touched the seat back	47
Driver wanted to see child	37
Easier to remove child from FFCSS	28
Child is fussier rear-facing	28
FFCSS is easier to install	15
Driver needed RFCSS for another child	10
Cost of buying a bigger RFCSS	10

Abbreviations: RFCSS, rear facing car safety seat; FFCSS, forward facing car safety seat.

Source: O´Neill J, et al. Clinical Pediatrics 2011

www.TheCarSeatLady.com

Passenger Safety

Parents Believe Child Is Too Big Long Before Child Outgrows Rear-facing

Table 1. Reasons Drivers Chose Forward Facing Direction for a Child Younger Than 2 Years

Reason Driver Chose Forward Facing Direction	Percentage Response
Child is at least one year	70
Child "outgrew" the RFCSS	63
Child weighed too much for the RFCSS	61
Child's feet touched the seat back	47
Driver needed RFCSS for another child	10
Cost of buying a bigger RFCSS	10

Of these ONLY ONE child actually had outgrown their rear-facing seat

Abbreviations: RFCSS, rear facing car safety seat; FFCSS, forward facing car safety seat.

Source: O'Neill J, et al. Clinical Pediatrics 2011

www.TheCarSeatLady.com

But what about their legs?

www.TheCarSeatLady.com

AgriLIFE EXTENSION

Passenger Safety

3 Years 2 Months - 37 lbs.

www.TheCarSeatLady.com

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Passenger Safety

1 Year 2 Months - 18 lbs.

www.TheCarSeatLady.com

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2 Years 2 Months - 35 lbs.

www.TheCarSeatLady.com

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3 Years 6 Months - 38 lbs.

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AgriLIFE EXTENSION

2 Years 1 Month - 27 lbs.

www.TheCarSeatLady.com

AgriLIFE EXTENSION

2 Years 1 Month - 27 & 32 lbs.

www.TheCarSeatLady.com

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Forward-facing kids also sit in uncomfortable-looking positions!

www.TheCarSeatLady.com

AgriLIFE EXTENSION

2 Years 5 Months - 38 lbs.

www.TheCarSeatLady.com

AgriLIFE EXTENSION

3 Years 10 Months - 38 lbs.

www.TheCarSeatLady.com

AgriLIFE EXTENSION

2 Years 10 Months - 40 lbs.

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and so do adults...

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Putting Feet on Airbag (as shown) is Dangerous

www.TheCarSeatLady.com

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AgriLIFE EXTENSION

Besides, there are MORE leg injuries to forward-facing kids than rear-facing kids

www.TheCarSeatLady.com

Arbogast KB, et al. Annual Proceedings / Association for the Advancement of Automotive Medicine, 2002

Passenger Safety

AgriLIFE EXTENSION

She wont wake up with a stiff neck ...but you sure would

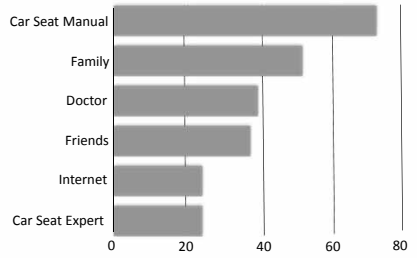
www.TheCarSeatLady.com

Passenger Safety

AgriLIFE EXTENSION

Parents Are Listening!

Who or What Influenced Your Decision To Forward-Face Your Under 2-year Old Child?



O' Neill J, et al. Clinical Pediatrics 2011

www.TheCarSeatLady.com

Passenger Safety

AgriLIFE EXTENSION

Rear-Facing Talking Points

- Minimum of 2 years is just that - a minimum.
- Validate:
  - 12-15 months is typically the most difficult time for kids in car seats (or any device with straps) - kids realize that these completely limit their independence & mobility.
  - Legs will look scrunched & uncomfortable - but child will be comfortable.

www.TheCarSeatLady.com

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To Keep Older Children Happy:

- Remove head rest so child can see better out the rear window
- Sit the car seat more upright (when manufacturer allows) to give child better view

www.TheCarSeatLady.com

If They're Still Not Sure…

- Have them watch the video
  - See handout with reminder cards

Special Thanks

Dr. Alisa Baer
Pediatrician, NICU
Columbia University Children's Hospital of NY

www.TheCarSeatLady.com

Passenger Safety

AgriLIFE EXTENSION

BOOSTER SEATS: WHAT FITS?

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

Passenger Safety

Boosters

Boosters are for children:

- Mature enough to sit still in lap/ shoulder belts
- Usually 4 years of age and over 40 lbs.

Passenger Safety

AgriLIFE EXTENSION

The Statistics in Texas

- Booster-age children have a higher non-use rate than younger age groups.
- Recent surveys show only 47% of 5-9 year olds in Texas were correctly restrained in booster seats.
- In 2010, 34 Texas children ages 5-9 were killed, and over 9,400 were injured.
- Less than 33% of those killed and only 25% of those injured were restrained.

Source: Texas Motor Vehicle Crash Statistics, Restraint Use by Age and Injury Severity, 2010

Passenger Safety

AgriLIFE EXTENSION

The Problem

- Children are prematurely put into booster seats when a harnessed seat would offer better protection.
- Children are put into a seat belt before they are big enough to fit – usually 4'9" tall.
- **57 inches tall is the average height of an 11-year-old!**

Passenger Safety

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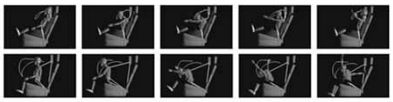
Why a Booster Seat?

Video: Lap belt vs. Booster



Video: Lap & shoulder belt vs. Booster

Videos Courtesy of Children's Hospital of Philadelphia

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BPB Effectiveness

- Children in belt-positioning booster seats are 45% less likely to sustain injuries than similarly aged children using the vehicle seat belt.
- Proper positioning of the seat belt by booster seats virtually eliminates injuries associated with injuries to the abdomen and spine.

Source: Effectiveness of Belt Positioning Booster Seats: An Updated Assessment, Arbogast, Jermakian, Kallan, and Durbin, Pediatrics, 2009.

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Problems with Belt Fit

- Shoulder belts in vehicles are anchored too high to fit small children. Designed for 4'9" adult.
- Most vehicle seats are too big for children to sit comfortably. Children will slouch and not be held firmly by the seat belt.
- Children do not have the hip bone (pelvis) development to keep the lap belt in place.

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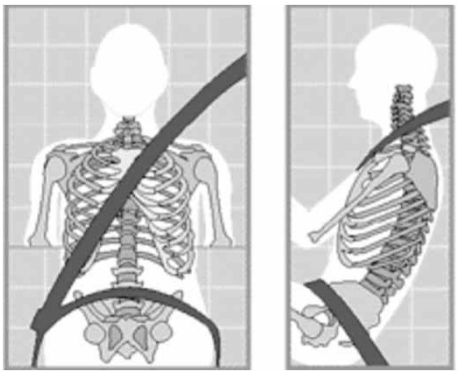

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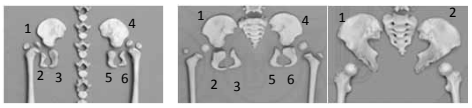
Hip Bones Underdeveloped

16-months **5 years** **Adolescent**



Number of Bones in the Hip and Pelvis

www.TheCarSeatLady.com
Images (C) BoneClones

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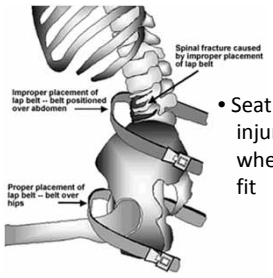
Consequences of Misuse


Spinal fracture caused by improper placement of lap belt
Improper placement of lap belt – belt positioned over abdomen
Proper placement of lap belt – belt over hips

- Seat belt syndrome: injuries that occur when lap belts don't fit

Illustration courtesy of Children's Hospital of Philadelphia

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Poor Lap Belt Fit

- An incorrect fit with a lap belt is very dangerous!
- When the lap belt rides over the abdomen, crash forces are loaded onto these soft weak tissues.
- Injuries can include ruptured spleen, kidneys, and even fracture of the lower spinal cord.

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Spinal Cord/Abdominal Injuries

- The most common cause of pediatric spinal cord injury (SCI) is a motor vehicle collision.
- Lap belt injuries and the seatbelt syndrome are often associated with pediatric SCI in improperly restrained children involved in MVCs.
- The risk of significant intra-abdominal injuries is increased almost four-fold in these children.
- This injury is complex, and its associated abdominal injuries are difficult to diagnose; delay in diagnosis increases morbidity.

Source: Journal of Spinal Cord Medicine, 2007

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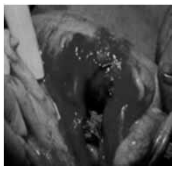
Dangers of Poor Lap Belt Fit



Intestinal Rupture

Splenic Laceration

Bladder Rupture

Photo source: CIREN
www.TheCarSeatLady.com

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Kids Slouch to Allow Knees to Bend

www.TheCarSeatLady.com

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Poor → Good Lap Belt Fit with Booster

Lap Belt: On abdomen
Knees: Don't bend naturally
→ **Child will slouch**

Lap Belt: Flat on thighs
Knees: Bend naturally
→**No slouching**

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Poor Shoulder Belt Fit

- Riding with a shoulder belt rubbing against the neck does not cause injuries.
- However, children who put the shoulder belt behind their back or under their arm are at great risk!
- Their upper body can be violently thrown forward in a crash.

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Shoulder Belt Rubbing Neck Is NOT Dangerous

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... but putting the shoulder belt UNDER your arm or BEHIND your back IS VERY DANGEROUS!

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Dangerous Head Movement with Shoulder Belt under Arm or Behind Back

Booster	Shoulder belt under arm	Shoulder belt behind back

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Slouching not only makes the lap belt fit poorly... but also the shoulder belt.

Slouching can lead to head injuries!

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Slouching ⟶ Head Injuries

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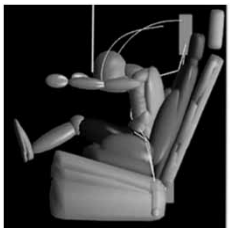
Excessive Head Movement with Slouching



Booster: Yes
Slouching: No

Booster: No
Slouching: Yes

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Boosters Make the Seat Belt Fit Well

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Lots to choose from!

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Types of Booster Seats

Backless Booster

High Back Booster

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Backless Boosters – Pros and Cons

Pros

- Older children don't want to be in a "little kid's seat."
- Narrow base may improve access to belt buckles.
- Low cost ($15-30).
- Convenient for air travelers to pack.

Cons

- Shoulder belt guides may be difficult to use or lost.
- Taller children benefit from a HB-BPB in vehicles without rear seat head restraints/support.

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HB BPB – Pros and Cons

Pros

- Built-in shoulder belt guides - proper positioning of belt.
- Some guides don't allow the shoulder belt to retract freely. Always check to be sure the belt moves freely.
- Adjustable headrests with side-wings help keep sleeping children upright with the shoulder belt correctly in place.

Con

- More expensive than backless BPBs

Source: Safe Ride News March/April 2006.

Is One Safer than the Other?

- Both provide protection in a crash.
- Both lift the child up so the adult lap-shoulder belt fits correctly.
- Studies show high backs are more protective in side-impact crashes.

Backless BPB Shoulder Belt Guide

Source: Partners for Child Passenger Safety Educational Illustrations

High Back Shoulder Belt Guide

Source: Partners for Child Passenger Safety Educational Illustrations

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IIHS Studies Fit

Good Belt Fit

Poor Belt Fit

- IIHS studies point out not all seats fit every child.

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INSURANCE INSTITUTE FOR HIGHWAY SAFETY

IIHS Booster Studies

- **Dec. 2009 – Booster Seat Ratings:**
  - 9 best bets and 6 good bets
  - 11 out of 60 seats evaluated aren't recommended
- **Sept. 2010– Booster Seat Ratings:**
  - 21 best bets and 7 good bets
  - 8 out of 72 seats evaluated aren't recommended
- **Oct. 2011– Booster Seat Ratings:**
  - 31 best bets and 5 good bets
  - 6 out of 62 seats evaluated aren't recommended

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How They Measured Fit

- Engineers assessed boosters using a specially outfitted crash test dummy representing an average-size 6-year-old child.
- The engineers measured how 3-point lap and shoulder belts fit the dummy under 4 conditions spanning the range of belt configurations in vehicle models.
- Each booster gets 4 scores for lap belt fit and 4 for shoulder belt fit.
- **NO CRASH TESTS WERE PERFORMED.**

Good fit Shoulder Belt

Good fit Lap Belt

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Types of Seats Rated Best

- Very few combination or 3-in-1 seats are rated best or good in booster mode.
- Mostly dedicated boosters receive best or good ratings.
- Some dual-mode dedicated boosters have different ratings for backless mode vs. high back mode.

Examples of Best Bets

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The In-betweens

- IIHS recommends "check fit."
- Seats may provide good fit for some children in some vehicles.
- Make sure the lap belt lies flat across a child's upper thighs, and the shoulder belt crosses snugly over the middle of the shoulder.
- Otherwise, choose a different seat.

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Not Recommended

- Some combination and 3-in-1 seats with side-positioners for shoulder belt use in BPB mode do not allow good fit.

More Info on IIHS Studies

- **Visit their website at:**

  http://www.iihs.org/research/topics/boosters/

Safe Kids Response to IIHS

- Booster seats are not one-size-fits-all.
- Parents must find the right fit for their child.
- Test the fit:
  1. Place child on booster seat, and fasten the lap/ shoulder belt around the child.
  2. Use seat belt guides on booster for the lap and shoulder belts.
  3. Check to be sure the lap belt rests on the top of the thighs or low on the hips.
  4. Check to be sure the shoulder belt is positioned on the bony shoulder - not the neck or face.
- If lap and shoulder belt are correctly positioned as described above, the booster seat will protect the child. If not, try another brand.

Good to Know…

- Booster seat backs offer varying degrees of rear-impact head/neck protection.
- Several HBBs do not allow use if the child's head is above the vehicle seat back.
- Some taller HBBs may interfere with the vehicle head restraint.
- Consult both vehicle and booster seat manuals for how to handle this situation.

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Weight Limits

- Don't move kids too early.
  - Keep kids in full harness for as long as possible.
- Weight limits vary.
  - Usually 30-100 for high back
  - Usually 40-100 for backless
- Look on labels for height and weight limits.
  - Some go to 110 or 120 lbs.
- Watch for proper belt path and fit.

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Boosters to Fit Children over 100#s

Manufacturer	Model Name	Weight Range
Britax	Parkway SG & SGL (high Back)	40-120
Britax	Frontier 80 - Combination (when used as booster)	40-120
Britax	Frontier 85 - Combination (when used as booster)	40-120
Combi	Kobuk Air-Thru (high back)	33-125
Harmony	Baby Armor (backless)	30-110
Harmony	Baby Armor (high back)	30-110
Harmony	V6 Youth (high back and backless)	30-110
Harmony	Dreamtime (high back)	30-110
Harmony	Carpooler (backless)	30-110
Magna Clek	Olli, Ozzi (backless with latch)	40-120
Recaro	ProSPORT–Combination (when used as booster)	30-120
Recaro	Pro BOOSTER	30-120
Sunshine Kids	SantaFe (backless)	30-120
Sunshine Kids	Monterey (high back)	30-120

Texas AgriLife Extension Service Passenger Safety 1/20/11

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…use a booster until the child passes the 5-Step Test!

Hint: Most kids are 10-12 years old when they pass.

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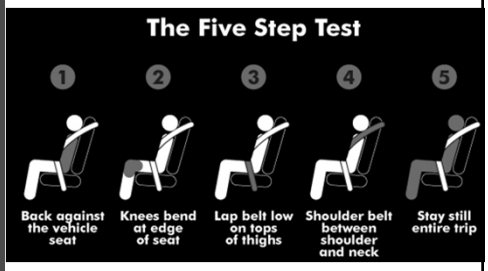

Source: SafetyBeltSafe USA

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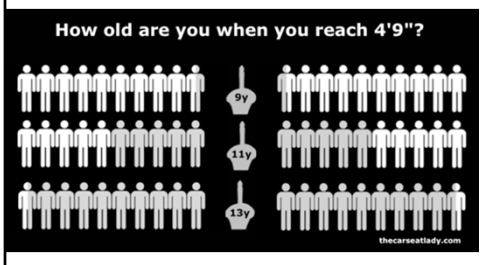

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Boosters and LATCH

Lower Anchors

- Most dedicated boosters do not come with lower anchor straps. The few that do most often have rigid lower anchors.
- Examples that have lower anchor connectors:
  - Cybex Solution X-fix - rigid lower anchor connectors
  - Jane Indy Plus - rigid lower anchor connectors
  - Magna Clek Oobr - rigid lower anchor connectors
  - Sunshine Kids Monterey - flexible lower anchor connectors

Backless Belt Positioning Booster

- Most do not have lower anchor straps.
- Exceptions:
  - Magna Clek Olli & Ozzi - rigid lower anchor connectors
  - Safety 1st Go Hybrid - flexible lower anchor connectors
  - Sunshine Kids Monterey – flexible lower anchor connectors

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Boosters and LATCH (cont.)

Tether Strap

- At present, only combination seats come with top tethers - some allow tether in booster mode.
  - Britax Frontier/Frontier 85: allow use of lower anchors & tether
  - Evenflo - all combo seats (retroactive) allow use of lower anchors & tether
  - Recaro Young Sport - recommend use of tether (do not allow lower anchors)
  - Safety 1st Go Hybrid (formerly Safeguard Go) - allow use of lower anchor
  - Nania Airway & Nuevo/Solo - allow use of lower anchors & tether

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Common Obstacles to Booster Seat Use

- Cannot fit 3 boosters across backseat
- Difficulty in buckling in boosters when there is a tight fit
- Sending along a booster seat when child is transported by another parent

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Narrow Boosters Leave Room

(tiny) Volkswagen Golf

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Climbing into a Buckled Belt

1	2	3	4
Booster with belt fastened	Climbing under belt	Tightening seat belt	Ready to go!

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Booster Seat with Portability

- Inflatable
- 12” wide
- Weighs 1 pound

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Booster Talking Points

- **Involve the child**
  - Teach child 5-step-test and how a booster works.
  - If buying a new seat, let child select (from 2 or 3 choices).
- **Empower parent to resist peer pressure** (from child and other parents) to stop using a booster sooner than is safe.
- **Backless is just as safe as High Back** (in most cases).
- **State laws are NOT enough** to keep kids safe - most kids need a booster until age 10-12.

www.TheCarSeatLady.com

Boosters and Carpools

- 70% of parents carpool.
- Over 30% of parents do not require their children to use a boosters when carpooling with other parents.
- 45% do not require their child to use a booster when driving other children that do not have one.

Source: Study from University of Michigan's C.S. Mott Children's Hospital, Pediatrics Journal Online, Jan.30, 2012

Alternatives for Boosters for Children over 40 Pounds

- Convertible seats to 50-80 lbs. forward-facing
- Combination seats to 50-90 lbs. and then become booster seats
- Forward-facing seats up to 105 lbs. but do not become boosters
- Vests that go to 168 lbs.
- See handout on higher weight seats

Graco Nautilus

Ride Safer Travel Vest

- Option for booster-age child when only lap belts are available.
- When used with lap belt only, tether MUST be used.
  - Small (3-6 years old)
    - 30 to 60 lbs.
  - Large (5-8 years old)
    - 50 to 80 lbs.

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Communicating with Children about Booster Seats

- **Your child's safety is not negotiable.**
- **What to do if your child says, "But I'm a big kid now"!**
  - Tell your child that the car will not move until everybody is buckled up correctly.
  - Let your child select his booster seat, and teach him how to buckle himself up.
  - Show your child that the booster will let him see out the window better and help make the seat belt comfortable.
  - Tell your child that boosters are for "big kids." Don't call a booster seat a child's seat.

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Communicating with Children Let's Talk Twinkie Physics

Courtesy Washington State Safety Restraint Coalition

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1 Hour Lunch Break

Lower Anchors and Tethers for CHildren (LATCH)

Standard Requirements and What We Are Seeing in Cars

1

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Phase in Dates

	Sept. 1999	Sept. 2000	Sept. 2001	Sept. 2002
Child Restraints	* Tether Straps - all forward facing CRS			
				Lower attachments - 100% CRs (except car beds, vests, boosters)
	MY 2000	MY 2001	MY 2002	MY 2003
Vehicles	* Tether anchors - 80% passenger cars			
		* Tether anchors -100% cars, truck, vans, SUVS		
		* Lower anchors -20% passenger vehicles		
			•Lower anchors - 50% passenger vehicles	
				* Lower anchors - 100% vehicles

2

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What Federal Standards affect LATCH?

- 571.213 Standard No. 213; Child restraint systems
  - S1. *Scope.* This standard specifies requirements for child restraint systems used in motor vehicles and aircraft.
  - S2. *Purpose.* The purpose of this standard is to reduce the number of children killed or injured in motor vehicle crashes and in aircraft.
  - S3. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks and buses, and to child restraint systems for use in motor vehicles and aircraft.

3

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571.213 Standard No. 213; Child restraint systems

- S5.9 Attachment to child restraint anchorage system
  - Attached by use of tool
  - Infant only – the base must have lower anchors
  - Manufactured on or after September 1, 2002
    - Lower anchors
  - Manufactured on or after September 1, 1999
    - Tether conforming to configuration and geometry Figure 11

Exceptions: car beds, harnesses and belt positioning seats

4

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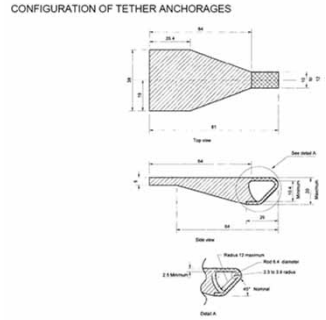
571.213 Standard No. 213; Child restraint systems

CONFIGURATION OF TETHER ANCHORAGES



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What Federal Standards affect LATCH?

- 571.225 Standard No. 225; Child Restraint Anchorage Systems
  - S1. *Purpose and Scope.* This standard establishes requirements for child restraint anchorage systems to ensure their proper location and strength for the effective securing of child restraints…..
  - S2. Application. This standard applies to passenger cars; to trucks and multi-purpose passenger vehicles with a gross vehicle weight rating (GVWR) of 8,500 pounds or less; and to buses (including school buses) with a GVWR of 10,000 lbs. or less.

6

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571.225 Standard No. 225; Child Restraint Anchorage Systems

- Child restraint anchorage system as defined in FMVSS 225 S3.
  - Two lower anchorages meeting the requirements of S9; and
  - A tether anchorage meeting the requirements of S6.

7

2012 Toyota Tundra Crewmax

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571.225 Standard No. 225; Child Restraint Anchorage Systems

280mm ± 1mm

8

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571.225 Standard No. 225; Child Restraint Anchorage Systems

280mm ± 1mm

9

571.225 Standard No. 225; Child Restraint Anchorage Systems

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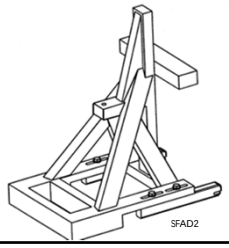
Forward

- With stand a force applied of 11,000N
- Reach force within 24-30 seconds
- Hold for 1 second
- 175 mm maximum displacement

Lateral

- (70-80 degrees) (150 mm maximum displacement)



SFAD2

10

571.225 Standard No. 225; Child Restraint Anchorage Systems

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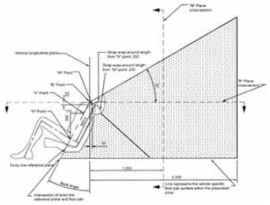
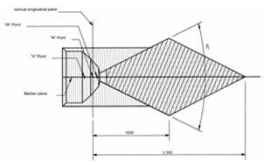
Side View



Top View



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SFAD1

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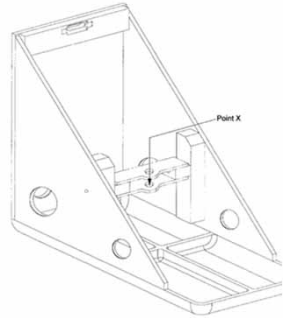

12

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571.225 Standard No. 225; Child Restraint Anchorage Systems

Tether Anchorages:
With stand a force applied of 15,000N

Reach force within 24-30 seconds

Hold for 1 second

Must not separate completely from the vehicle seat or seat anchorage or the structure of the vehicle.

Each tether anchorage shall:

- Permit attachment of a tether hook (FMVSS 213)
- Be accessible without any tools other than a screwdriver or coin
- After being accessed, be ready for use without the use of tools
- Be sealed to prevent exhaust fumes from entering the passenger compartment

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Lower Anchors and Tethers for CHildren (LATCH)

- Result of LATCH study of 2006 showed that most people *do not* understand the proper use or importance of using LATCH
  - 40% of parents are relying on seat belts
- Working group of manufacturers & advocacy groups developed new LATCH message

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www.nhtsa.gov

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Lower Connector Designs

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LATCH and Tether positions

- LATCH
  - (16) vehicle 2011 models offer more than (2) positions
  - (5) of these offer (4) or (5)
- Tether Anchors
  - (22) vehicle models offer more than (3) positions
  - (8) offer (5) or more positions

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Source: 2011 LATCH Manual, Page 15

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2012 Acura MDX

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What is the maximum weight capacity for lower anchors in vehicle?

- Most state 48 lbs. limit.
- (12) refer to CR instructions for maximum weight use
- (6) provide no guidance
- (4) indicate 40 lbs.
  - Honda
  - Acura
  - Mercedes
  - Ferrari

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Source: 2011 LATCH Manual, Page 15

Maximum Weight for Vehicle Lower Anchors

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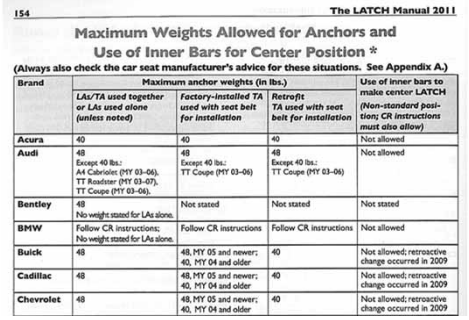

154 The LATCH Manual 2011

Maximum Weights Allowed for Anchors and Use of Inner Bars for Center Position *

(Always also check the car seat manufacturer's advice for these situations. See Appendix A.)

Brand	Maximum anchor weights (in lbs.)			Use of inner bars to make center LATCH (Non-standard position; CR instructions must also allow)
	LAs/TA used together or LAs used alone (unless noted)	Factory-installed TA used with seat belt for installation	Retrofit TA used with seat belt for installation	
Acura	40	40	40	Not allowed
Audi	48 Except 40 lbs.: A4 Cabriolet (MY 03–06), TT Roadster (MY 03–07), TT Coupe (MY 03–06).	48 Except 40 lbs.: TT Coupe (MY 03–06)	48 Except 40 lbs.: TT Coupe (MY 03–06)	Not allowed
Bentley	48 No weight stated for LAs alone.	Not stated	Not stated	Not stated
BMW	Follow CR instructions; No weight stated for LAs alone.	Follow CR instructions	Follow CR instructions	Not allowed
Buick	48	48, MY 05 and newer; 40, MY 04 and older	40	Not allowed; retroactive change occurred in 2009
Cadillac	48	48, MY 05 and newer; 40, MY 04 and older	40	Not allowed; retroactive change occurred in 2009
Chevrolet	48	48, MY 05 and newer; 40, MY 04 and older	40	Not allowed; retroactive change occurred in 2009

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Maximum Weight for Vehicle Lower Anchors

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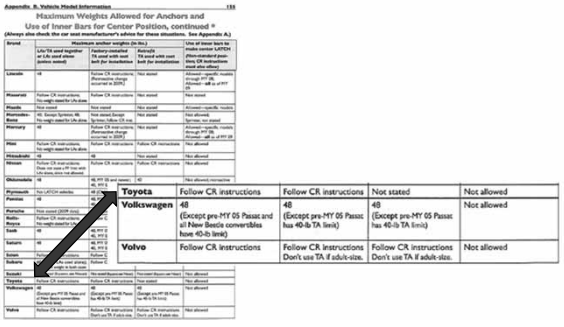

Appendix B. Vehicle Model Information 155

Maximum Weights Allowed for Anchors and Use of Inner Bars for Center Position, continued *

(Always also check the car seat manufacturer's advice for these situations. See Appendix A.)

Brand	Maximum anchor weights (in lbs.)			Use of inner bars to make center LATCH (Non-standard position; CR instructions must also allow)
	LAs/TA used together or LAs used alone (unless noted)	Factory-installed TA used with seat belt for installation	Retrofit TA used with seat belt for installation	
Toyota	Follow CR instructions	Follow CR instructions	Not stated	Not allowed
Volkswagen	48 (Except pre-MY 05 Passat and all New Beetle convertibles have 40-lb limit)	48 (Except pre-MY 05 Passat has 40-lb TA limit)	48 (Except pre-MY 05 Passat has 40-lb TA limit)	Not allowed
Volvo	Follow CR instructions	Follow CR instructions Don't use TA if adult-size.	Follow CR instructions Don't use TA if adult-size.	Not allowed

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Challenges of LATCH and Real World

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- Vehicle vs. Child Restraint
- What were we taught in certification class?
  - Top tether anchors are located where the car body is strong enough to withstand crash forces. Top tether anchors have upper weight limits that vary. Always refer to the vehicle owner's manual and child restraint manual for installation guidance. Both manuals must be in agreement for tether and lower anchor use on seats with higher weight limits. When no guidance is provided, discontinue use of the lower anchors and/or tether and use the vehicle seat belt for a child heavier than 40 pounds.

(CPS Student Manual, April 2007 (R10/10), Pg. 82)

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High Weight Harness CRS and LATCH

BRITAX Frontier 85 Combination
- 85 lbs. in harness
- Vehicle or assume 40 lbs.
- Recommends use of tether at all times

Recaro Prosport Combination
- 90 lbs. in harness
- Varies by vehicle
- MUST use lap-shoulder for child 52 lbs.

If you have a top tether anchorage in your vehicle, it can **ONLY be used** for children weighing less than **52 pounds (23.6 kg).**

Baby Trend Trendz FastBack 3-in-1
- 70 lbs. in harness
- With children weighing more than 50 pounds (23 kg) use vehicle belt (**NOT LATCH) for installations.**
- Baby Trend requires using the tether for installation whenever possible.

Diono Radian RXT® Convertible
- 80 lbs. in harness
- SuperLATCH up to 80 lbs.
- Always recommends use of top tether

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Can I use LATCH in the center seating Position to install a child restraint?

A. Yes, Always
B. No, Never
C. Maybe
D. Check BOTH the CRS and Vehicle manual

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CPS Student Manual Pg. 80

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Check user guides of CRS

KeyFit & KeyFit 30 by Chicco

⚠ *This child restraint base is designed to be used with lower LATCH anchors at the standard spacing (11 inches) **ONLY!** Refer to vehicle owner's manual for information about LATCH and child restraint installation positions.*

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The figure above shows typical locations for lower anchors and tether anchors in a vehicle. Check your vehicle owner's manual to learn if it is equipped with LATCH, the maximum weight rating for the lower anchors, and for information on the lower anchor locations and seating positions available for use with this child seat. Standard vehicle seat spacing between LATCH anchors is 11 inches (27.9 cm). This child seat can be used in a seating position with up to 20 inches (50.8 cm) of space between the LATCH anchors if the vehicle manufacturer allows.

Boulevard 70 by Britax

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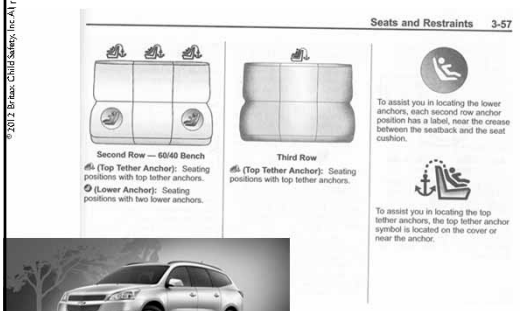
2010 Chevy Traverse


Seats and Restraints 3-57
Second Row — 60/40 Bench
(Top Tether Anchor): Seating positions with top tether anchors.
(Lower Anchor): Seating positions with two lower anchors.
Third Row
(Top Tether Anchor): Seating positions with top tether anchors.
To assist you in locating the lower anchors, each second row anchor position has a label, near the crease between the seatback and the seat cushion.
To assist you in locating the top tether anchors, the top tether anchor symbol is located on the cover or near the anchor.

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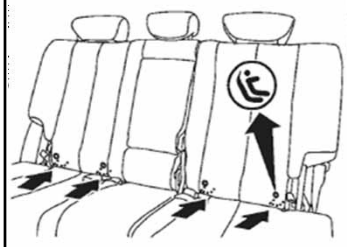
2009 Nissan Murano



The LATCH anchor points are provided to install child restraints in the rear outboard seating positions only. Do not attempt to install a child restraint in the center position using the LATCH anchors.

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2010 Ford Explorer

Seating and Safety Restraints

Recommendations for attaching child safety restraints for children

Restraint Type	Child Weight	Use any attachment method as indicated below by "X"			
		LATCH (lower anchors and top tether anchor)	LATCH (lower anchors only)	Safety belt and top tether anchor	Safety belt only
Rear facing child seat	Up to 48 lb (21 kg)		X		X
Forward facing child seat	Up to 48 lb (21 kg)	X		X	
Forward facing child seat	Over 48 lb (21 kg)			X	

Use of inboard lower anchors from the outboard seating positions (center seating use)

The lower anchors at the center of the second row rear seat are spaced 592 mm (23 inches) apart. The standardized spacing for LATCH lower anchors is 280 mm (11 inches) center to center. A child seat with rigid LATCH attachments cannot be installed at the center seating position. LATCH compatible child seats (with attachments on belt webbing) can only be used at this seating position provided that the child seat manufacturer's instructions permit use with the anchor spacing stated. Do not attach a child seat to any lower anchor if an adjacent child seat is attached to that anchor.

WARNING: The standardized spacing for LATCH lower anchors is 280 mm (11 inches) center to center. Do not use LATCH lower anchors for the center seating position unless the child seat manufacturer's instructions permit and specify using anchors spaced at least as far apart as those in this vehicle.

www.motorcraftservice.com

27 2010 Explorer Owners Guide, 2nd Printing

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Use of Non-Standard Spacing

- Child Restraints
  - (11) allow use of their products in center rear with nonstandard spacing if the vehicle permits.
  - (20) do not allow
- Vehicles
  - Ford, Lincoln, Mercury allow in 2009 MY and newer
  - Mazda, Chrysler, Dodge, Jeep, Ram pre-2009 in certain models
  - All others do not allow

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Source: 2011 LATCH Manual, Page 15

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Can CR be Installed in the Center with Non-Standard Lower Anchors?

Yes—Center use with lower anchors allowed with bars spaced 11 inches or wider if vehicle manufacturer permits:

Manufacturer	Spacing allowed (inches)
Britax	11–20
Combi*	Yes-space not specified
Dorel	Yes-space not specified
Fisher-Price (Safe Voyage)	11–20
Graco*	Yes-space not specified
Orbit	11–20
Recaro	11–20
SafeGuard	11–20
Snug Seat	11–20
Sunshine Kids*	11–14
Triple Play Products	11–18

* Change from 2009 *LATCH Manual*

No—Center installation with lower anchors allowed only in standard LATCH positions specified by VM:

Baby Trend	Mercedes-Benz *(Rigid)*
Bergeron	Merritt Manufacturing*
Chicco	mia Moda
Clek *(BPB, Rigid)*	Peg Perego
Cybex *(BPB, Rigid)*	Porsche *(Rigid)*
Evenflo	Sammons Preston *(2007 data)*
E-Z-ON Products	Snug Seat
Jané *(Rigid)*	Team Tex America*
KidsEmbrace	Teutonia
Learning Curve	Xportation
Lenox	

* Previously listed incorrectly as approving center use with nonstandard-width lower anchors.

Table 2: Decision for Installing a CR With LATCH Using Inboard LAs

Scenario	CR instructions allow use with non-standard lower anchors in center position (see space limits, above)	Vehicle Instructions (See Appendix B)	Decision: Create LATCH position in center?
1	Not allowed or no guidance given	Not allowed or no guidance given	NO
2	Not allowed or no guidance given	Allow if CR instructions permit	NO
3	Allow if vehicle instructions permit	Not allowed or no guidance given	NO
4	**Allow if vehicle instructions permit**	**Allow if CR instructions permit**	**YES**

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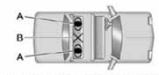
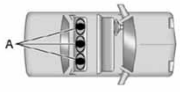
2011 Chevy Equinox

Configurations for Use of Child Restraints

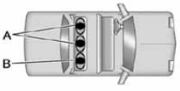


A. Child restraint using LATCH
B. Occupant prohibited

A. Child restraint using LATCH
B. Occupant prohibited
C. Child restraint or occupant using safety belt



A. Child restraint or occupant using safety belt



A. Child restraint or occupant using safety belt
B. Child restraint using LATCH

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FMVSS 213 Installation Testing Requirements

TABLE FOR S5.3.2

Type of add-on child restraint system	Means of installation				
	Type 1 seat belt assembly	Type 1 seat belt assembly plus a tether anchorage, if needed	Child restraint anchorage system (effective September 1, 2002)	Type II seat belt assembly	Seat back mount
Harnesses labeled per S5.3.1(b)(1) through S5.3.1(b)(3) and Figure 12					X
Other harnesses		X			
Car beds	X				
Rear-facing restraints	X		X		
Belt-positioning seats				X	
All other child restraints	X	X	X		

Seat Belt Type's are defined in 49CFR571.209 Seat Belt Assemblies

- *Type 1 seat belt assembly is a lap belt* for pelvic restraint.
- *Type 2 seat belt assembly is a combination* of pelvic and upper torso restraints.

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Can BOTH LATCH and seat belt be used?

A. Yes, Always
B. No, Never
C. Check BOTH the CRS and Vehicle manual

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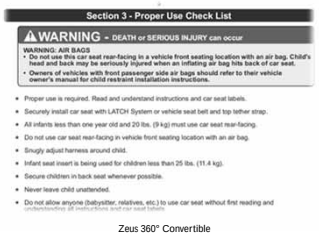
⚠WARNING

- ***ONLY*** *use for securing child restraint to lower LATCH anchor points.*
- ***ALWAYS*** *read and follow exactly the instructions which accompany your vehicle and child restraint.*
- ***NEVER*** *attach two hooks to one vehicle lower anchor point.*
- ***DO NOT*** *use the vehicle seat belts to install a child restraint when using the LATCH system.*

Generations Combination
Page 22
by Evenflo


Section 3 - Proper Use Check List

⚠WARNING – DEATH or SERIOUS INJURY can occur

WARNING: AIR BAGS
- Do not use this car seat rear-facing in a vehicle front seating location with an air bag. Child's head and back may be seriously injured when an inflating air bag hits back of car seat.
- Owners of vehicles with front passenger side air bags should refer to their vehicle owner's manual for child restraint installation instructions.

- Proper use is required. Read and understand instructions and car seat labels.
- Securely install car seat with LATCH System or vehicle seat belt and top tether strap.
- All infants less than one year old and 20 lbs. (9 kg) must use car seat rear-facing.
- Do not use car seat rear-facing in vehicle front seating location with an air bag.
- Snugly adjust harness around child.
- Infant seat insert is being used for children less than 25 lbs. (11.4 kg).
- Secure children in back seat whenever possible.
- Never leave child unattended.
- Do not allow anyone (babysitter, relatives, etc.) to use car seat without first reading and understanding all instructions and car seat labels.

Zeus 360° Convertible
Page 5
by Combi

COMBI USA

1962 Highway 160 West, Suite 100
Fort Mill, SC 29708
800-992-6624
www.combi-intl.com

Note: Combi USA, Inc. no longer handles **Car Seat Specialty** products. Please contact **Nania by Team Tex** at 877-912-1313 with any questions regarding these products.

Lower (LATCH) Attachments

- **Lower attachment:** a single strap with a tilt-lock adjuster or a push-button adjuster attached to the restraint by a rivet. The LATCH strap can be turned over to change the adjuster to the other side for easier access.

  Lower connector types vary. Certain models use a hook-on connector, while others use a push-on connector. The thicker part of push-on connectors should be on top.
- **Center installation** in nonstandard LATCH position: Is acceptable if vehicle manufacturer approves it. (Retroactive)
- **Maximum weight for lower attachments:**
- **Seat belt and lower LATCH:** It is acceptable to use the seat belt in conjunction with the lower LATCH anchors as long as the vehicle manufacturer specifies it as an acceptable configuration in their owner's manual. Refer to individual CR instructions for specific routing methods permitted.
- **Lower attachment retrofit kits:** Brand-specific kits available with maximum weight of 65 pounds.
- **Retrofit tether kits:** Brand-specific kits available with maximum weight of 40 pounds. No extended-length tether straps available.

Rear-facing tether:

- Base of Tyro II (infant CR with base): Has optional tether that can be used in Swedish mode.
- Coccoro (convertible seat): Can be tethered rear facing in the Swedish mode provided that the user has current rear-facing tethering instructions and the Combi attachment strap. Retroactive, but consumer must purchase Combi Tether Attachment Strap kit with instructions. (Note: "Tether Attachment Strap" may be renamed.)
- Zeus Turn and Zeus 360: Tether is attached to upper back of seat base and is routed toward back of vehicle to approved anchor.

School Bus Use

- **Use of tether:** CR (up to 40 pounds) may be used on a school bus without the use of a tether.

  Refer to the school bus manufacturer regarding where to anchor tether. Prefer use of built-in anchor if available.
- **Lower attachments:** Prefer use of lower anchors on bus seat rather than a lap belt because the bars are closer together than some lap belt anchors on buses.

Latch-Related Recall

Avatar, 11/12/03 – 5/7/04

- When used with Avatar in RF position, LATCH strap could be severed in a crash. Call for replacement part.
- Use vehicle seat belt when CR is facing the rear until the strap is replaced.

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2009 Chevy Taho

Securing an Add-On Child Restraint in the Vehicle

⚠ CAUTION:

A child can be seriously injured or killed in a crash if the child restraint is not properly secured in the vehicle. Secure the child restraint properly in the vehicle using the vehicle's safety belt or LATCH system, following the instructions that came with that child restraint and the instructions in this manual.

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2010 Explorer Owners Guide

Seating and Safety Restraints

Recommendations for attaching child safety restraints for children

Restraint Type	Child Weight	Use any attachment method as indicated below by "X"			
		LATCH (lower anchors and top tether anchor)	LATCH (lower anchors only)	Safety belt and top tether anchor	Safety belt only
Rear facing child seat	Up to 48 lb (21 kg)		X		X
Forward facing child seat	Up to 48 lb (21 kg)	X		X	
Forward facing child seat	Over 48 lb (21 kg)			X	

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2009 Ford F-150

Recommendations for attaching child safety restraints for children

Restraint Type	Child Weight	Use any attachment method as indicated below by "X"				
		LATCH (lower anchors and top tether anchor)	LATCH (lower anchors only)	Safety belt and top tether anchor	Safety belt and LATCH (lower anchors and top tether anchor)	Safety belt only
Rear facing child seat	Up to 48 lb (21 kg)		X			X
Forward facing child seat	Up to 48 lb (21 kg)	X		X	X	
Forward facing child seat	Over 48 lb (21 kg)			X	X	

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How do I explain to a parent it is important to use a top tether?

- A top tether can reduce the distance that the child's head moves forward by 4-6 inches and can thus lessen the risk of head injuries in a crash. (CPS Student Manual Pg. 81)
  - Head excursion without top tether = 32"
  - Head excursion with a top tether = 28"
- **QUANTIFYING THE RELATIONSHIP BETWEEN VEHICLE INTERIOR GEOMETRY AND CHILD RESTRAINT SYSTEMS**

  C.P. Sherwood, Y. Abdelilah, J.R. Crandall – University of Virginia

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Can a BPB be positioned using LATCH?

- BRITAX Frontier 85 & SICT, Parkway SG & SGL
  - If the LATCH anchors in your vehicle prevent proper vehicle belt fit across your child you cannot use LATCH to position this seat in booster mode.
- 2010 Chevrolet Traverse
  - "Notice: Do not let the LATCH attachments rub against the vehicle's safety belts. This may damage these parts. If necessary, move buckled safety belts to avoid rubbing the LATCH attachments."
- Evenflo
  - Booster and LATCH use
    - We do permit the use of tethers and lower anchors, for belt positioning boosters, as long as the position of the booster seat in the vehicle and/or the resulting fit of the auto belt over the child are not affected.
    - This is retro active for all booster seats.

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2006 Acura TL 4-Door Sedan

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Additional LATCH Resources

- Page 146-147 Vehicle quick reference list
- Page 110 High-weight harness tether requirements
- Page 60-64 Dealing with Discrepancies between CRS and Vehicle

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Additional LATCH Resources

- Pages 8-9 Using Tether for Child over 40 lbs.
- Page 65-70 Dealing with Discrepancies between CRS and Vehicle
- Page 107 High-weight harness tether requirements
- Page 154-155 Vehicle quick reference list (lower anchor capacity & use of inner anchors in center position)

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Amendment to FMVSS 213 Docket No. NHTSA-2011-0176

- Effective February 27, 2014
- CRS up to 80 lbs.
- Use of Hybrid III 10-year-old child chest dummy (HIII-10C), weighing 35 kg (78 lb)
  - Used for all CRS above 65 lbs.
- LATCH Anchors
  - Weight of CRS + child not to exceed 65 lbs.
  - Label on CRS
  - Excluding BPB from LATCH maximum recommended weight label
- Top Tether
  - Research program
  - For now, no weight limit for use of top tether

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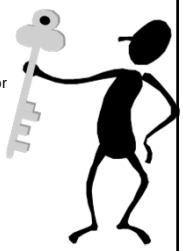
Thank you!

Sarah Tilton
Child Passenger Safety Advocate
Child Passenger Safety Technician Instructor
Britax Child Safety, Inc.
13501 South Ridge Drive
Charlotte, NC 28273
Direct Line (704) 409-1695
Email: Sarah.Tilton@BRITAX.com



AgriLIFE EXTENSION
Texas A&M System

TRANSPORTING CHILDREN WITH SPECIAL HEALTH CARE NEEDS

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

Passenger Safety

Overview

- Restraint Options
- Checkup Event
- Curbside Case Studies
- Resources

Material in this section is from Safe Kids Road Safety for Kids Online Training

Goal

- The goal of this module is for CPS technicians to learn more about working with children who have special health care needs since they may attend an event.
- If you are interested in learning more:
  - *Safe Travel for All Children: Transporting Children with Special Health Care Needs*
  - 2-day training provided by Riley Hospital for Children (www.preventinjury.org)

Objectives

By the end of the session, the CPST will be able to:

- Identify ways to handle short-term special transportation needs at curbside events.
- Clarify the role of the curbside CPST relative to children with special transportation needs.
- Identify relevant transportation resources in the community.

Children First!

- Children are people first!
- Any medical or behavioral conditions are secondary.
- **Do not label the child.**
  - A label defines the condition, not the child. EXAMPLE: Say “a child with autism,” not “an autistic child.”

Which Child Has Special Health Care Needs?

- Child has a chronic physical problem
- Child has a chronic developmental problem
- Child has a behavioral problem
- Child has an emotional problem
- All of the above

- Definition: Children with special health care needs [CSHCN] are those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who require health and services of a type or amount beyond that generally required by children.

Source: PEDIATRICS Vol. 102 No. 1 July 1998, pp. 137-139

Profile: CSHCN

- In 2005, 14%, or **10.2 million**, U.S. children <18 years had special health care needs.
- 1 in 5 households have at least 1 child with special health care needs.
- Increased prevalence in families with:
  - Older children
  - Boys
  - Multi-racial children
  - Lower income

Source: Maternal and Child Health Bureau and National Center for Health Statistics, State and Local Area Integrated Telephone Survey, National Survey of Children with Special Health Care Needs, 2005–2006

Working with Families Curbside: All families. Same rules.

- Recognize the family as a unit.
- Share complete and unbiased information.
- Be aware of the impact of change.
- Be open-minded and non-judgmental.
- Be prepared to repeat information in a different way.
- Respect the caregiver's choices.

CPS Technician Role

- Identify appropriate resources, and have a list prepared and ready to provide.
- Provide current information.
- Develop community partnerships.
- Assist in solving transportation problems.
- Assist families with proper use and installation.
- Do NOT exceed expertise. Know how to refer to a specially trained tech!

Special Health Care Needs Trained CPST Role

- *Completed additional training specific to children with special health care needs beyond the national CPS Certification Course.*
- Identifies transportation challenges.
- Provides community resources.
- Proposes solutions.
- Explains technical information to the caregiver in a simple, clear way.

Transportation Challenges

- Children with medical conditions that affect their cardiorespiratory status, posture, behavior, or size can present transportation challenges.
- Examples include prematurity, neuromuscular disorders, application of casts, Down syndrome, and autism.

Infants Born Prematurely

Parents may come to you before the baby is born. Techs should be able to provide basic guidance:

- Need rear-facing seats with smaller internal dimensions to fit their smaller infants.
- Need CR minimum weight limit less than 5 pounds.
- May have breathing problems in a semi-upright position.
- May need more head and trunk support than rolled towels provide.
- Should use CR only for transportation (not for an extended time).
- Should be observed in car safety seats for breathing-related problems before hospital discharge.

Photo courtesy of National CPS Certification Training; April 2007, R 10/10

Infants Born Prematurely

- May need to travel flat in a car bed if they have problems with their breathing, heart rate, or oxygen level when sitting in a CR.

Children with Apnea

- Experience temporary interruptions of their breathing, which can be normal or abnormal.
- Have pathological apnea if their breathing pauses > 20 seconds or they have shorter pauses associated with cyanosis, marked pallor, hypotonia, or bradycardia.

Children with Apnea

- May have a type of apnea, positional apnea, which is directly related to their sitting position.
- May have increased symptoms or stop breathing if their heads flop too far forward.
- Should be monitored in a CR before hospital discharge to make sure the they do not have breathing problems while in their CR.
- May benefit from positioning with rolled receiving blankets along their sides and crotch roll to prevent sliding down in the CR.

Children with Apnea

- May need to travel in a car bed.
- May travel prone (on stomach) only with medical permission.
- Should be tested in a semi-reclined CR before transitioning from a car bed to a CR.

Children with Down Syndrome

- May have decreased muscle tone or unstable neck bones and will benefit from rear-facing longer.
- May have a tendency to be overweight as they grow older and require a CR with a higher weight harness or booster with higher weight limit.
- May have low muscle tone and loose ligaments, making their joints very flexible (sometimes called “double jointed”) and getting out of a CR harness easier.
- May also be inclined to get out of their car seats due to behavioral challenges.
- May benefit from CR with higher weight harnesses, large medical seats, or vests with back closures.

Children with Cerebral Palsy

- Have a non-progressive defect or lesion of their brain, resulting in disorders of movement and posture.
- Have symptoms that range from slight speech impairment to total inability to control their body movements.
- May have muscle tone abnormalities that affect their ability to sit in a CR.
- May benefit from riding rear-facing to higher weights.
- Can be centered in a CR with rolled blankets placed along their trunk.
- May benefit when they are older from a forward-facing seat that can semi-recline to help keep their heads from falling forward.

Children with Cerebral Palsy

- May not be able to sit up unassisted, and may require the support of a large medical seat with positioning features such as head support pads or pommel.
- Should be evaluated by a rehabilitation therapist to determine the most appropriate large medical seat.
- May need a wheelchair at some time. Not all wheelchairs are approved for transit (in vehicle). A WC-19 transit wheelchair should be considered, if needed.

Children with Behavioral Challenges

- May be impulsive, easily distracted, and have short attention spans.
- May resist consistent use of restraints, and may unbuckle themselves.
- May be distracting to drivers.
- May have a diagnosis of autism, attention deficit-hyperactivity disorder, or cognitive impairment.

Children with Behavioral Challenges

- Keeping them restrained:
  - « Be sure harnesses are snug.
  - « Provide activities to keep them entertained.

Children with Behavioral Challenges

- May need to try a variety of restraints to see which is most difficult to escape.
- May benefit from a CR with a higher weight harness, a large medical seat, or vest with back closure and floor mount tether.
- May benefit from intervention from a behavioral pediatrician or therapist to help them sit safely restrained in the back seat.

Children Who Are Overweight or Obese

- Weigh more than is healthy for their height.
- Have a body mass index at or above the 95th percentile (2-19 years old).
- Frequently exceed the weight limits of a CR before they are developmentally ready for the next step.
- May need a CR with higher weight harness; booster with higher weight limit; large medical seat; or vest with higher weight limit.

Transporting Equipment

- Use prescribed equipment during transport.
- No specific product available to secure medical equipment.
- Place on floor of vehicle wedged with pillows, foam, or blankets.
- Secure with unoccupied seat belts.
- Check vehicle owner's manual about placing items under vehicle seat.

Other Recommendations for Transporting CSHCN

- Minimize travel.
- Make frequent stops to check on the child or provide a break.
- Have enough power for portable equipment for a least twice the length of the trip.
- Position the child in the back seat of the vehicle with an adult observing.

Source: Transporting Children with Special Health Care Needs Training and Resource Manual, revised March 2007

Restraint Options for CSHCN Restraint Basics

Whether or not the child is using a conventional or special restraint, the same basic rules apply:

- Selection
- Direction
- Location
- Installation

Restraint Basics

Go back to core curriculum:

- Harness snug.
- Retainer clip at armpit level.
- Harness straps at or below shoulders rear facing, and at or slightly above the shoulder forward facing.
- Secure installation.
- Follow instructions carefully.
- When in doubt, seek help.

Conventional Seat Solutions

- The approach for selecting the best restraint for a child with special health care needs is the same as for any child.
- Try conventional seats first. Different CRs fit children differently. Try a variety.
- When conventional seats do not meet the child's specific needs, a specialty child restraint may need to be used.
- Never modify a CR to force "fit."

Photo courtesy of National CPS Certification Training: April 2007, R10/10

Passenger Safety

AgriLIFE EXTENSION

Optimal: Rear-Facing Reminders

- Keep all children rear-facing as long as possible to the highest weight or height allowed by a convertible CR.
- Rear-facing positioning provides the best head and spinal cord protection.
- Children that ride rear-facing have added support and improved airway management. This may be especially important for children with low tone and/or large heads.

Passenger Safety

AgriLIFE EXTENSION

Optimal: CR Forward-Facing Options

- For older children with lower muscle tone or poor head control, consider seats that have semi-recline options.
- Consider using a seat with a higher harness weight limit to provide extra support for a longer period of time.

Passenger Safety

AgriLIFE EXTENSION

Higher Weights/Heavier Children

- Many conventional child restraints have upper weight limits to 50, 65, 80+ lbs.
- Stay updated! Car seat manufacturers introduce new higher weight harness restraints and new products regularly.
- These are often available at local retailers.

Higher Weight Harness (HWH) Restraint Use and LATCH Anchors

- Always consult vehicle and CR manuals for LATCH and tether weight limits.
  - « Follow all stated limits. If vehicle and CR manufacturer limits conflict, follow the lowest one.
  - « Assume a 40-pound limit if the information is not available.
- Contact vehicle manufacturer customer service for guidance.

Specialty Restraints

- If a conventional restraint doesn't best serve the needs of the child, specialty restraints are available.
- **Type of specialty restraint determined by child's medical team, *not curbside CPST.***

Source: Photo used with permission from the Riley Hospital for Children.

Specialty Restraints

- Products available to serve children who:
  - must lay flat in the vehicle
  - have outgrown conventional child restraint system and still require a five-point harness to sit upright
  - demonstrate severe behavioral problems
- Usually ordered through local equipment vendor.
- Third-party payers may cover cost with documentation.

Specialty Restraints: Types

- Car beds
- Convertible CR for children with hip casts
- Large medical seats
- Vests

Car Beds

- For infants who must lie down
- Prematurity, low birth weight, apnea, Pierre Robin Sequence, osteogenesis imperfecta
- Three types:

Angel Ride:
Up to 9 lbs.

Dream Ride SE
5-20 lbs

Hope Car Bed
4.5-35 lbs

Car Beds

- Installed lengthwise with baby's head facing the center of the vehicle

The position* a baby lies in the bed is determined by the infant's medical team

*supine = on the back
*prone = on the stomach
*sidelying = on the side

Baby's medical team determines when baby can move from car bed to car seat

Photo used with permission from the Riley Hospital for Children.

Snug Seat Hippo

- Convertible seat designed for children in hip casts
  - « Rear facing 5-33 pounds
  - « Forward Facing 1 year and 20-65 pounds

Wedge Positioning System (optional)

Forward-Facing Medical Seats

- Designed for larger occupants; upper weight limits can exceed 100 lbs.
- Children with poor neck and trunk control, behavioral problems, neuromuscular disorders, etc.
- Equipped with features and accessories to aid positioning.

Forward-Facing Medical Seats

- Typically, a rehabilitation therapist evaluates a child's need for a medical seat after receiving a prescription from a physician.
- Once an appropriate seat is determined, the therapist orders it from a vendor and submits paperwork for approval by a third-party payer (insurance, Medicaid).
- Approval process can take months and is specific to each state.
- Child may require a conventional higher weight harness seat until medial seat approved.

Forward-Facing Medical Seats

- Typically, require some type of tethering system; varies with seat.
- Some seats require two tether anchors at a certain weight.
- Some can use shoulder portion of seat belt as part of tethering system.
- May require installation of special heavy-duty tether hardware.

Large medical seat that uses shoulder portion of lap/ shoulder belt as part of a tethering system.

Photo used with permission from the Riley Hospital for Children.

Vests

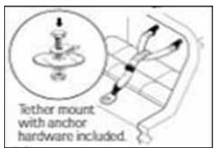
Upright E-Z-ON

Modified E-Z-ON

Vests

Upright E-Z-ON Vest
- 20-168 pounds
- Child and adult sizes
- Requires use of tether (check instructions)
- Some models may be used on school buses.
- Models with back closure and/or floor mount tether may be useful for children with behavioral challenges.

Use with top tether and lap belt only.



Illustrations from E-Z-On manual

Passenger Safety

AgriLIFE EXTENSION

Modified E-Z-ON Vest

Upright E-Z-ON Vest
- For children 1-12 years, 20-100 pounds who must lay down; different sizes
- Child must fit lengthwise on bench seat.
- For children under 30 inches, one seat belt through hip and chest strap.
- For children over 30 inches, one seat belt through chest strap and another through hip strap and extremity belt.

Passenger Safety

AgriLIFE EXTENSION

Prepare for Checkup Events

- Be prepared to handle situations involving CSHCN. Ask families if any of their children have special health care needs when making the appointment.
- Arrange for a special needs-trained technician to work the event.
- Be prompt with the appointment. Waiting in line is often difficult for families who have children with special health care needs.
- CSCHN children tend to be more environmentally sensitive. Consider a location that can be controlled in terms of temperature, noise, fumes, etc.
- Try to have appropriate replacement CRs: Order CRs that rear-face longer and CRs that have harnesses to higher weights. You may not have a CR that meets their needs. Do the best you can!
- Recommend that the family work with a specially trained tech for an assessment of child's abilities and transportation needs (current and future).
- Have resource materials and local referral information for families.

Passenger Safety

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Checkup Events

Refer to a special needs-trained technician if:

- Parent reports a transportation issue due to a medical condition
- Positioning or behavioral challenges (i.e., can't hold head up, slumping forward, escaping seat)
- Child in specialized restraint or wheelchair

At a minimum, provide pamphlets and community resource information. If possible, refer to a local special needs certified technician.

Source: Dr. Marilyn Bull's presentation at Lifesavers Conference 2008

Checkup Events: Equipment

- If providing CRs is an option:
  - « Infant seats with minimum weight <5 lbs
  - « Seats with higher weight rear-facing harnesses
  - « Seats with forward facing recline
  - « Seats with higher weight forward facing harnesses
- Car seat manufacturers' instructions for adaptive restraints
- Towel rolls/receiving blankets
- Current (2011) LATCH manual by Safe Ride News

Source: Dr. Marilyn Bull's presentation at Lifesavers Conference 2008

Checkup Events: Technician Tips

- For the child's protection, have the parent lift the child when it is time to take the child in and out of the restraint. They know how to best lift and hold the child.
- Creative, untested, jury-rigged solutions can lead to risky practice and be a danger to the child.
- Even minor modifications can compromise the performance of a CR.
- DO NOT MODIFY THE CR.

Checkup Events: Vehicular Challenges

The family's vehicle may have some limitations:

- Not enough seating positions for all occupants because special restraint may take up more than one seating position
- May be too small for the restraint
- May not have top tether anchors or working seat belts

Curbside Situations

We will be talking about 6 situations where you must think about possible solutions curbside. After we go through each exercise, we'll select the best response.

Curbside Situation #1

- Jimmy is a 2 ½ year old with a diagnosis of cerebral palsy. He weighs 27 pounds and is currently being transported in a forward-facing convertible seat. His family is concerned because Jimmy cannot hold up his head.
- What can you discuss with his family to assist with his head support?

Curbside Situation #1

Solution:

- Discuss the benefits of rear-facing longer, and suggest this as a better option than forward facing for Jimmy.
- A child's head should not be held back separately (separate Velcro strap).
- Jimmy is small enough to use a conventional CR.

Curbside Situation #2

- Lila was born prematurely. She now weighs 6 pounds and is being transported in the rear-facing infant-only seat in which she passed her car seat observation before hospital discharge. You notice that the family is using an aftermarket head support product. The mother explains that if they don't use the product, Lila's head falls to the side and forward in the CR.
- What is the best course of action to take in this situation?

Curbside Situation #2

Solution:

- Make sure the CR fits the baby.
- Explain to the mother why it is not advisable to use aftermarket products that did not come with the car seat.
- If allowed by the CR manufacturer, demonstrate use of rolled receiving blankets along the infant's sides.
- Check the angle of the CR to make sure it is installed correctly.

Curbside Situation #3

- A grandparent shows up with a 6 year old who weighs 38 pounds and has cerebral palsy and very low muscle tone. He has problems holding his head upright. He currently rides laying on the back seat and is unrestrained.
- What do you recommend to his family?

Curbside Situation #3

Solution:

- Suggest a modified E-Z-ON vest, which will allow him to lie down in the back seat.
- Suggest a five-point harness, and recommend the grandmother discuss his transportation needs with his medical team.

Curbside Situation #4

- A five year old child who weighs 38 pounds and is 40 inches tall has autism and unbuckles his car seat harness every time.
- What is one of the first steps to take curbside?

Curbside Situation #4

Solution:

- Eliminate misuse first. The child may be getting out of the seat because of harnessing errors or because he's too tall.
- Unless you are a behavioral specialist, you should avoid giving advice on behavior modification.
- After you have eliminated misuse, you may need to recommend a different CR.

Curbside Situation #5

- A 2 year old weighs 57 pounds and is 33 inches tall. The child is being transported in a combination seat with a harness maximum of 40 pounds. The seat is installed with LATCH.
- What solution is most appropriate?

Curbside Situation #5

Solution:

- At 57 pounds, the child meets the weight criteria for a belt-positioning booster, but since she is only 2 years old, she is not ready developmentally to transition to a booster. She would be better protected in a CR higher weight harness.
- When moving to a seat with a higher weight harness, check the anchor weight limits for LATCH. It may be only 40 or 48 pounds, so the CR would have to be secured with the seat belt.

Curbside Situation #6

- Cindy arrives at a car seat clinic in a large medical seat. She is 8 years old, weighs 62 pounds, and has low muscle tone. Cindy's mother wants you to check the seat to make sure the family has installed it correctly. You notice that the seat is installed with a seat belt but no top tether.
- What is one of the first things you will need to do?

Curbside Situation #6

Solution:

- Check the CR and vehicle instructions for top tether requirements.
- Possibly suggest a belt-positioning booster if the child can sit comfortably and stay in place for the entire trip.

Resources

- "Safe Travel for All Children: Transporting Children with Special Health Care Needs"
  - « Two-day enrichment course for CPST developed by the Automotive Safety Program, Riley Hospital for Children
  - « Combination of classroom sessions and hands-on activities
  - « Focuses on passenger vehicles and restraints
  - « Skills tests and written exam (84%) to pass the course
  - « Courses listed on www.preventinjury.org under Training Dates

Special Needs Restraints

- Purchased through a distributor or directly through manufacturer
- List of all CR manufacturers - http://www.cpsboard.org/childmanu.htm
- Examples of SN CR manufacturers
  - « www.columbiamedical.com
  - « www.ezonpro.com
  - « www.eztether.com
  - « www.snugseat.com

Resources

- **Vary by community...Educate yourself**
  - « Local AAP chapter and communicate with your chapter's executive director http://www.aap.org/member/chapters/chaplist.cfm
  - « Check with local hospital, March of Dimes, Injury Prevention, or Safe Kids Coalitions.
  - « Develop a list of **local and national** programs that support families with CSHCN.
- **AAP: http://www.aap.org/family/Carseatguide.htm**
  - « Section on transporting children with special health care needs
  - « Shopper's Guide
  - « Special Needs Product Chart: http://www.aap.org/family/SpecialCarSeatsChart.pdf

Resources, cont.

- Riley Hospital Automotive Safety Program/The National Center for the Safe Transportation of Children with Special Health Care Needs
  - « www.preventinjury.org
  - « Medical FAQs
  - « Definitions and transportation options
  - « Extra training for CPSTs
  - « Fact sheets and video on transporting premature infants
- LATCH Manual and School Transportation Handbook: www.saferidenews.com
- Child Restraint Manufacturers' Instructions CD: www.carseat.org

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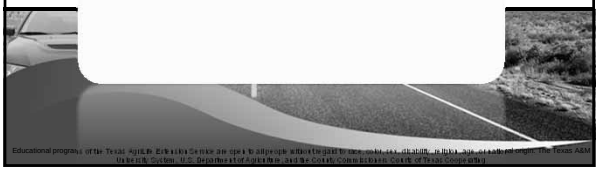
- Kim Herrmann
- Susan Lindenmuth

15 Minute Break

What's New in Child Safety Seats?



Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin. The Texas A&M University System, U.S. Department of Agriculture, and County Commissioners Cooperating.

The Manufacturers

- Britax
- BubbleBum
- Chicco
- Combi
- Diono
- Dorel
- Evenflo
- Graco
- Harmony
- KidsEmbrace
- Learning Curve
- Magna Clek
- Orbit
- Peg Perego
- Recaro
- Summer Infant

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Chaperone™

Cowmooflage
E9LG72L

REAR-FACING

- 4-30 lbs.
- 32" or less
- Harness Positions: (7) 6-11"
- (2) Buckle position at 3.00" & 4.50"
- 6 Years from Date of Manufacture

© 2012 Britax Child Safety, Inc. All rights reserved MSRP $229.99, Additional Base $89.99

B-SAFE™

REAR-FACING

- 4-30 lbs.
- 32" or less
- Harness Slots:
- 5" – 7" – 9" – 12"
- (2) Buckle position at 3.50" & 5.50"
- 6 Years from Date of Manufacture

Kiwi (May 2012)
E9LE5

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An infant positioning insert may be necessary for small infants (sold separately).
(2) Buckle position at 5.00" and 7.50"

Roundabout® 55 Gumdrop	Marathon® 70 Azalea	Boulevard® 70 Zebra	Boulevard® 70 CS Cowmooflage	Advocate® 70 CS Opus Gray
MSRP: $199.99	MSRP: $289.99	MSRP: $319.99	MSRP: $339.99	MSRP: $379.99
5-40 lbs. RF 20-55 lbs. FF	5-40 lbs. RF 20-70 lbs. FF	5-40 lbs. RF 20-70 lbs. FF	5-40 lbs. RF 20-70 lbs. FF	5-40 lbs. RF 20-70 lbs. FF
46" or less	49" or less	49" or less	49" or less	49" or less
4 Harness slots 8.5-11.5-14-16.5	10 Harness Positions 8.5–9.5-10.5-11.5 12.5-13.5-14.5-15.5 16.5-17.5	10 Harness Positions 8.5–9.5-10.5-11.5 12.5-13.5-14.5-15.5 16.5-17.5	10 Harness Positions 8.5–9.5-10.5-11.5 12.5-13.5-14.5-15.5 16.5-17.5	10 Harness Positions 8.5–9.5-10.5-11.5 12.5-13.5-14.5-15.5 16.5-17.5

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Frontier™85

Combination Harness-2-Booster ®

Britax

HARNESS MODE

- 2 Yrs & 25 lbs. to 85 lbs.
- 30-57" in height
- Harness Positions:
- (10) 12.00-20.00"
- (3) Buckle position at 5.50",7.00"&8.25"

BOOSTER MODE

- 40-120 lbs.
- 42-65" in height
- Shoulder Height: 13.50-24.50"
- 9 Years from Date of Manufacture

Maui Blue
E9LC21X

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Frontier™85 SICT

Combination Harness-2-Booster ®

Britax

Cardinal
E9LE32X

HARNESS MODE

- 2 Yrs & 25 lbs. to 85 lbs.
- 30-57" in height
- Harness Positions:
- (10) 12.00-20.00"
- (3) Buckle position at.50",7.00"&8.25"

BOOSTER MODE

- 40-120 lbs.
- 42-65" in height
- Shoulder Height: 13.50-24.50"
- 9 Years from Date of Manufacture

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Parkway SG

When Using Backrest

- 40-120 lbs.
- 38-63” in height
- Shoulder Height: 15.00-21.50”

When Using without Backrest

- 40-120 lbs.
- 38-63” in height
- Shoulder Height: 15.00-21.50”

- 6 Years from Date of Manufacture

Pink Sky
E9LA8H7

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Parkway SGL

ISOFLEX Flexible Lower LATCH Connection System

Nutmeg
E9LD22R

When Using Backrest

- 40-120 lbs.
- 38-63” in height
- Shoulder Height: 15.00-21.50”

When Using without Backrest

- 40-120 lbs.
- 38-63” in height
- Shoulder Height: 15.00-21.50”

- 6 Years from Date of Manufacture

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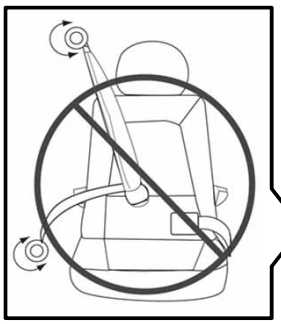
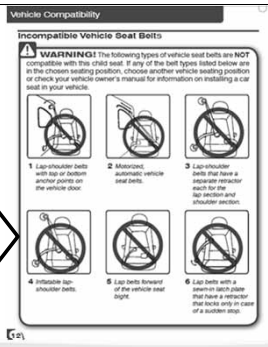
Can I use an inflatable seat belt to install a BRITAX CRS?




Vehicle Compatibility
Incompatible Vehicle Seat Belts
WARNING! The following types of vehicle seat belts are NOT compatible with this child seat. If any of the belt types listed below are in the chosen seating position, choose another vehicle seating position or check your vehicle owner's manual for information on installing a car seat in your vehicle.
1 Lap-shoulder belts with top or bottom anchor points on the vehicle door.
2 Motorized, automatic vehicle seat belts.
3 Lap-shoulder belts that have a separate retractor each for the lap section and shoulder section.
4 Inflatable lap-shoulder belts.
5 Lap belts forward of the vehicle seat bight.
6 Lap belts with a sewn-in latch plate that have a retractor that locks only in case of a sudden stop.

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Non-regulated Products

The use of non-Britax Child Safety, Inc. covers, inserts, toys, accessories, or tightening devices is not approved by Britax. Their use could cause this child seat to fail federal Motor Vehicle Safety Standards or not perform as intended in a crash.

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Accessories by BRITAX for BRITAX

- Cup Holder - $14.99
- Infant Positioning Insert - $14.99
- Travel Cart - $79.99
- Travel Bag - $69.99
- Secure Guard Clip - $19.99

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NEW Accessories by BRITAX for BRITAX

- EZ-Cling Sun Shades - $9.99
- Kick Mat - $15.99
- Head & Body Support Pillow - $29.99

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Accessories by BRITAX for BRITAX

Storage Pouch
MSRP: $15.99 April 2012

Vehicle Seat Protector
MSRP: $26.99 May 2012

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Britax | Advocate Extranet

Accessing the Site
1. Log on to cert.safekids.org
2. Locate "Action Items"
3. Select "Online CEUs"
4. Select "Britax Tech Site"

Sarah Tilton
Child Passenger Safety Advocate
Child Passenger Safety Technician Instructor
704.409.1695
sarah.tilton@britax.com

Facebook.com/Britax
Twitter.com/Britax
Youtube.com/user/BritaxUSACarSeats

Advocate Support

- YOUR input is valuable!
- Consumers should call Consumer Services
- Technical assistance as a technician or instructor, please contact myself.
  - Installation issues
    - Vehicle make, model, year
    - Seating position
    - Upholstery type
    - Pictures

Sarah Tilton
Child Passenger Safety Advocate
Child Passenger Safety Technician Instructor
Britax Child Safety, Inc.
13501 South Ridge Drive
Charlotte, NC 28273
Direct Line (704) 409-1695
Email: Sarah.Tilton@BRITAX.com

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Thank you for all you do to help keep our little friends safe!

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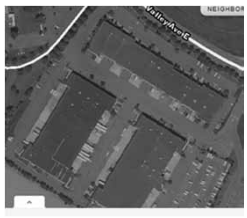
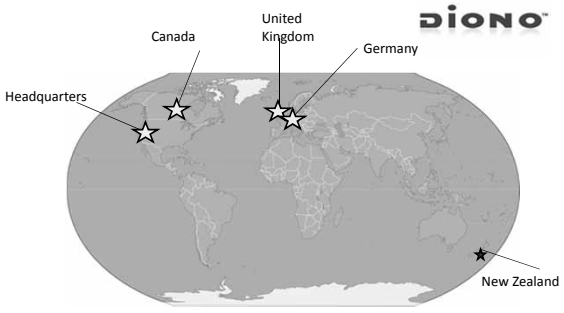
DIONO™



We are expanding! Our new offices and warehouse now located in Puyallup, WA

DIONO

25% of our U.S. staff are CPS Certified
More by Summer of 2012



Our products are sold in over 54 Countries

Introducing the All-New Radian R-Series
Convertible+Booster

From Birth to Booster

RadianRXT
Convertible+Booster

5-45 lbs. Rear-Facing:
20-80 lbs. Forward-Facing
50-120 lbs. BPB
Adjustable Head Support
Pillow inserts
1 Cup Holder

MSRP $339.99
CPST Discount & State Dist.
Program Discounts available

RadianR120® Convertible+Booster

DIONO

5-45 lbs. Rear-Facing
20-80lbs Forward-Facing
50-120 lbs. BPB
Pillow Inserts
1 Cup Holder

MSRP $309.99
CPST Discount &
State Dist. Program
Discounts Available

RadianR100® Convertible+Booster

DIONO

5-40 lbs. Rear-Facing
20-65 lbs. Forward-Facing
50-100 lbs. BPB

MSRP $259.99
CPST Discount & State
Dist. Program Discounts
Available

DIONO

All New Features

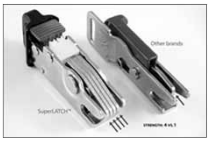
- Wider Seat
- Expandable Sides
- Wider at the Hip
- Cup Holders with Multiple Attachment Points
- Booster Mode

SuperLATCH Innovation

DIONO

NHTSA mandated increased Anchor strength as of Sept 2005

Heavy duty 4 prong connector specifically designed for Radian



Steel Frame: Most robust material for energy absorption

Allows installation up to 45 lbs. RF
Allows installation up to 80 lbs. FF
You can over-ride vehicle mfg stated weight limits starting Sept 2005

DIONO

Should not be used with a child who is less than 1 year old and/or does not have complete head control.

Angle Adjuster Rear Facing ONLY!
Sold Seperately

Print

RadianRXT convertible car seat	Crash Test Protocol	Protocol Validation	Speed	Impact Force	Test Dummy size/weight	Installation types	Top tether[1]	CRASH TEST RESULTS: Rear-facing angle below 70°	Forward excursion below 813mm	Chest g's below 60	Head Injury Criteria (HIC) below 1000	U.S. Govt. Requirement
Rear-facing: 9 - 45 lbs	FMVSS213	NHTSA	30 mph	25 g	1 yr/22 lb	Lower Anchor (or lap belt)	No	✓		✓	✓	Required results for RF child below 22 lbs[2]
	FMVSS213	NHTSA	30 mph	25 g	3 yr/45 lb	Lower Anchor (or lap belt)	No	✓		✓	✓	NO requirements for RF child above 22 lbs[2]
(Steel frame)	NCAP (47g)[3]	NHTSA	35 mph	47 g	3 yr/45 lb	Lower Anchor (or lap belt)	No	Dummy safely retained, child seat intact				NO "severe accident" crash test required
Forward-facing: 20 - 80 lbs	FMVSS213	NHTSA	30 mph	25 g	6 yr/50 lb	Lower Anchor (or lap belt)	No		✓	✓	✓	Required results for FF child below 50 lbs[2]
	FMVSS213	NHTSA	30 mph	25 g	6 yr/65 lb	Lower Anchor (or lap belt)	No		✓	✓	✓	NO requirements for FF child above 50 lbs[2]
	FMVSS213	NHTSA	30 mph	25 g	10 yr/80 lb	Lower Anchor (or lap belt)	No		✓	✓	✓	NO requirements for FF child above 50 lbs
(Steel frame & SuperLATCH)	NCAP (47g)[3]	NHTSA	35 mph	47 g	10 yr/80 lb	Lower Anchor (or lap belt)	No	Dummy safely retained, child seat intact				NO "severe accident" crash test required
Booster 50 - 130 lbs	FMVSS213	NHTSA	30 mph	25 g	Adult/ 120 lb	Lower Anchor (or lap belt)	No		✓	✓	✓	NO requirements for FF child above 50 lbs
(Steel Frame)	NCAP (47g)[3]	NHTSA	35 mph	47 g	Adult/ 120 lb	Lower Anchor (or lap belt)	No	Dummy safely retained, child seat intact				NO "severe accident" crash test required
Side Impact (Non-Forced sides)	Rear-facing	Home	17 mph	17 g	3 yr/45 lb	Lower Anchor	Yes	Dummy fully contained and protected within child seat sidewalls				NO side impact test required[4]
	Forward-facing	ADAC, Germany	17 mph	17 g	6 yr/50 lb	Lap belt	Yes	Dummy fully contained and protected within child seat sidewalls				NO side impact test required

[1] For children under 22 lbs RF and 50 lbs FF, child seats must meet FMVSS213 crash test standards without using top tether.

[2] Above 22 lbs RF and 50 lbs FF, a child seat does not have to meet any biomechanical performance standards. Above these weights, top tether use can be 'required' by a manufacturer.

Radian & ems

- No need to access a child for a seat
- Waterproof covers
- Machine washable
- Folds flat

Monterey™ Expandable Booster

- Child Size Range
  Up to 120 lb / 63" tall
- Side Impact Protection
- LATCH Attachment
- Airtek™ Foam
- Cup Holders
- Backless Booster
- Adjustable Height & Width

MSRP: $149.99
CPST & State Dist. Program discounts available.

Energy Absorbing Foam and Aluminum Reinforced frame

Whether in the car or on the track, Max and Andrew say "Buckle Up!!

Sending me an email to SIGN up for our TechTalk newsletter

Allana Pinkerton
CPS Advocate/CPSI #1609
allana.pinkerton@diono.com
(855) 463-4666 ext. 252

Infant Seats

Ez-Flex-loc
5-22 lbs., 28.5"

Flex-loc
5-30 lbs., 30"

Passenger Safety

Combination Seats

EuroSport

Harness: 22-50 lbs.
High Back Booster: 30-100 lbs.
Backless Booster: 40-100 lbs.
Smart Safety Buckle Beeps Alert

FastBack

Harness: 22-70 lbs.
High Back Booster: 30-100 lbs.
Backless Booster: 40-120 lbs.

Passenger Safety

Infant Seats

KeyFit

4 – 22 lbs.
Up to 30”

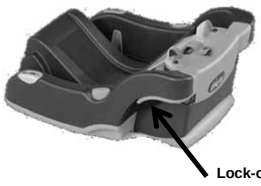
KeyFit 30

4 – 30 lbs.
Up to 30”

Passenger Safety

KeyFit Infant Seat Lock-off

- Lock-off on base for shoulder belt
- Helps prevent tilting from switchable retractor



Passenger Safety

Booster Seat

Strada

- Height adjustable head/torso
- Width adjustable side wings
- Cupholder with adjustable angle
- EPS throughout

4-10 years old
High Back: 33-100 lbs. 38-57”
Backless: 40-100 lbs., 40-57”

Passenger Safety

Advocate Support

- Training seats available
  - Application required, request via email
  - $25 shipping fee
- Contact Information for Techs
  - Julie Prom - juliep@chiccousa.com or 317-867-3872

Passenger Safety

Infant Seats

Shuttle 33

Birth – 33 lbs.

Navette

Birth – 22lbs.
Institutional Sales Only
Without Base: $64.50 each
Contact: dolores@child-source.com

Passenger Safety

Coccoro

Combi.

RF: 5-33 pounds
FF: 20-40 pounds

Passenger Safety

AgriLIFE EXTENSION

Coccoro

Combi.

Installation with Seat Belt: Option 1

Installation with Seat Belt: Option 2

Passenger Safety

AgriLIFE EXTENSION

Convertibles

Combi.

Zeus Turn

RF: 5-22
FF: 20-40

Zeus 360

RF: 5-33
FF: 20-40

Passenger Safety

AgriLIFE EXTENSION

Booster

Combi.

Kobuk Air-Thru

- ✓ Tru Safe Side Impact
- ✓ EPS Lining
- ✓ Memory Foam
- ✓ Breathable Fabric
- ✓ Adjustable Shoulder Belt Width
- ✓ Low Lap Belt Path

3 years
33 – 125 lbs.

Passenger Safety

AgriLIFE EXTENSION

DOREL Juvenile Group

COSCO solid value | smart design

Eddie Bauer EST. 1920

Safety 1st

MAXI-COSI

Passenger Safety

AgriLIFE EXTENSION

Infant Seats

DOREL Juvenile Group

Comfy Carry* **OnBoard 35** **MAXI-COSI Prezi**

4-22 and 29” ht.

4-35 and 32” ht.

4-35 and 32” ht.

**Comfy Carry is replacing Designer 22- Elite model has front-adjust harness*

Passenger Safety

AgriLIFE EXTENSION

New Convertibles

COSCO Apt 40RF

R-F: 5-40 lbs.
F-F: 22-40 lbs.

Safety 1st Chair Air

R-F: 5-40 lbs.
F-F: 22-65 lbs.
* Air Protect

Eddie Bauer XRS 65/Guide 65

R-F: 5-40 lbs.
F-F: 22-65 lbs.
Fits small spaces

MAXI-COSI PRIA 70

$159.99

R-F: 4-40 lbs.
F-F: 22-70 lbs.
Removable padding for small infants <u>≤4</u>

Passenger Safety

COSCO Basic Convertibles

Apt 40RF
Scenera

Walmart

R-F: 5-35 lbs.*
F-F: 22-40 lbs.

*5-35 will be phased out and replaced by 5-40

Scenera 40RF
Apt 40 RF

$49.99

TARGET

$1. kmart

R-F: 5-40 lbs.
F-F: 22-40 lbs.

Passenger Safety

Air Protect™ Convertibles

OnSide Air*

5-40 R-F, 22-40

Complete Air 65

air protect side impact technology

5-40 R-F, 22-65

**Does not have air bladders in the head area*

Passenger Safety

New!

Dual Level to Ground Labeling

Rear-Facing:

- Most Upright:
  - Children - **22-35/40 lbs.**
  - Sit-up unassisted
  - Recline between lines
- Most Reclined:
  - Children - **5-22 lbs.**

Passenger Safety

AgriLIFE EXTENSION

New Combination Seats

DOREL Juvenile Group

Safety 1st

S1 Run/Air ~~Apt 40RF~~

Harness: 22-65 lbs.
Booster: 40-100 lbs.

*Exclusively at Babies R Us/Toys R Us

Safety 1st

Essential Air

$49.99

$129.99

Harness: 22-65 lbs.
Booster: 40-100 lbs.

Passenger Safety

AgriLIFE EXTENSION

DOREL Juvenile Group

Safety 1st

Go-Hybrid Booster

- Previously IMMI SafeGuard Go
- Now, Safety 1st Go Hybrid Booster
- Seat folds for storage

Harness: 22-65
BPB: 40-100

Passenger Safety

AgriLIFE EXTENSION

3-in-1 Seat

Safety 1st

Alpha Elite 65

- Base is NON-removable
- Anti-slip harness

R-F: 5-40
F-F: 22-65
BPB: 40-100

Passenger Safety

AgriLIFE EXTENSION

Boosters

Boost Air Protect

Side-impact protection in high back mode

High Back: 30-100 lbs.
Backless: 40-100 lbs.

HighRise

30-100 lbs.*

Pronto

40-100 lbs.

***All backless models moving to 40 lb. minimum**

Passenger Safety

AgriLIFE EXTENSION

Infant Car Seats

evenflo

Discovery

5-22 lbs.
Up to 29”

Embrace 35

4-35 lbs.
Up to 30”

SecureRide 35

4-35 lbs.
Up to 32”

Serenade

5-35 lbs.
Up to 32”

Passenger Safety

AgriLIFE EXTENSION

Convertibles

Tribute

R-F: 5-35 lbs.
F-F: 20-40 lbs.

Titan

R-F: 5-35 lbs.
F-F: 20-50 lbs.

Triumph 65

R-F: 5-40 lbs.
F-F: 20-65 lbs.

Momentum 65

R-F: 5-40 lbs.
F-F: 20-65 lbs.

Passenger Safety

All-In-I Seat

Symphony 65

- E3 Energy Absorption
- Infinite Slide Harness Adjustment

R-F: 5-40 lbs.
F-F: 20-65 lbs.
Booster: 40-100 lbs.

Passenger Safety

Combination Seats

Chase

Harness: 20-40 lbs.
Booster: 40-100 lbs.

Maestro

Harness: 20-50 lbs.
Booster: 40-110 lbs.

SecureKid 300/400*

Harness: 20-65lbs.
Booster: 40-110 lbs.

*SecureKid 400 has SureLATCH and E3

Passenger Safety

High Back Boosters

Amp High Back

High Back: 30-110 lbs.
Backless: 40-110 lbs.

Big Kid High Back

High Back: 30-110 lbs.
Backless: 40-110 lbs.

Big Kid Sport

High Back: 30-110 lbs.
Backless: 40-110 lbs.

Passenger Safety

Backless Boosters

40-110 lbs.

Passenger Safety

Evenflo Product Updates

- **Tether Lengths**
  - Tether extenders now available for all Evenflo Convertible and Booster car seats
- **Booster and LATCH use**
  - Permit use of tethers and lower anchors, for belt positioning boosters, as long as the position of the booster seat in the vehicle and/or the resulting fit of the auto belt over the child are not affected.
  - This is retro-active for all booster seats.
- ***NEW* – Non-standard center anchoring allowed if spacing is at least 11" and vehicle mfg. allows.**

Passenger Safety

Evenflo Offers Replacement Clip

- **Two-piece retainer clip**
  - Sold separately
  - Can be used on all Evenflo infants, convertibles, and combination seats

Passenger Safety

Evenflo Tech Site

- Safetymadeeasier.com – Revamped!!
- Click on 'CEUs for CPS Techs'

Passenger Safety

Infant Car Seat Range

Infant Car Seat Range

SnugRide	SnugRide 30	SnugRide 35
5-22 lbs. Up to 29"	4-30 lbs. Up to 30"	4-35 lbs. Up to 32"

Note: SafeSeat will eventually be phased out and replaced with SnugRide 35

Passenger Safety

t-tario 35 Infant Seat

- Co-engineered with Teutonia
  - Includes memory foam

5-35 lbs.
Up to 35”

Passenger Safety

Convertible Car Seat Range
Convertibles

ComfortSport

R-F: 5-35 lbs.
F-F: 20-40 lbs.

Classic Ride 50

R-F: 4-40 lbs.
F-F: 20-50 lbs.

My Ride 65

R-F: 5-40 lbs.
F-F: 20-65 lbs.

My Ride 65

Shown with Safety Surround

R-F: 5-40 lbs.
F-F: 20-65 lbs.

Passenger Safety

3-in-1 Seat

Smart Seat

R-F: 5-40 lbs
F-F: 20-65
Booster: 30-100

- Key Features:
  - Smart Base stay-in-car base for one time install
  - Seat to base locking indicators ensure that the car seat is secured into the base
  - One-hand, adjustable headrest with no re-thread harness
  - On the go, 5-position recline so you can recline child while in use
  - EPS, energy absorbing foam

Passenger Safety

Combination Seats

GRACO

Nautilus

Harness: 20-65 lbs.
HB Booster: 30-100 lbs.
Backless: 40-100 lbs.

Argos 70/ Argos 70 Elite

No re-thread harness.

Harness: 20-70 lbs.
Booster: 30-100
Backless: 40-120 lbs.

Passenger Safety

AgriLIFE EXTENSION

Boosters

GRACO

Turbo Booster

HB Booster: 30-100 lbs.
Backless: 40-100 lbs.

Backless Turbo Booster

Backless: 40-100 lbs.

Passenger Safety

AgriLIFE EXTENSION

High Back Boosters

harmony

Dreamtime

30-110 lbs.

Baby Armor

30-110 lbs.

V6 High Back*

30-110 lbs.
*More narrow

Boosters feature full-body front, rear, and side-impact protection and anti-torque backs.

Passenger Safety

AgriLIFE EXTENSION

Backless Boosters

harmony

Youth Booster

30-100

Walmart

$13.50

Cruz

30-110

TARGET

$16.50

Olympia

30-110

Wider seat fits bigger children

Passenger Safety

AgriLIFE EXTENSION

KidsEmbrace

Newer entry in car seat market

- 2-position recline
- Push-on lower anchor connectors

Harness: 22-65
Booster: 30-100 and 3 yrs.

Passenger Safety

AgriLIFE EXTENSION

Infant Seats

the first years

Via I470*

5-35 lbs.
Up to 32”

Via with handle as anti-rebound

**Replaces Via35 Model. Must use base with 22-35 lb. child*

Passenger Safety

AgriLIFE EXTENSION

Convertibles

C650 True Fit **C670 True Fit Premiere**

R-F: 5-35
F-F: 23-65

R-F: 5-35
F-F: 23-65

True Fit Premiere
Flip-up rebound bar

True Fit convertibles feature removable head rest for infant 5-22 lbs.

Passenger Safety

Boosters

All are folding

Compass B505 **Compass B540** **Compass B570**

30-100 lbs.
At least 3 years old

B505
30-100 lbs.

30-100 lbs.
At least 2 years old

B530 & B540
30-100 lbs.
For taller child

Deeper sides
Color-coded belt paths

30-100 lbs.
At least 3 years old

Passenger Safety

New Convertible

Foonf

R-F: 5-45
F-F: 20-65

Features rebound bar
Available in the summer 2012

Passenger Safety

Boosters with LATCH

All have rigid lower anchor connectors
Oobr can recline when anchors are used

Olli

40-120 lbs.

Ozzi

40-120 lbs.

Oobr

40-100 Backless
33-100 High Back

Passenger Safety

Infant Seat

Birth – 22 lbs.

Orbit Base with Strong Arm Knob

Passenger Safety

Convertible

R-F: 15-35
F-F: 1 yr. & 20-50

Installs with Orbit base
or Braces

Passenger Safety

Infant Seat

PRIMO VIAGGIO SIP 30-30
Side-impact Protection

Birth to 30 lbs.
Up to 30”

Passenger Safety

Convertible

New

Primo Viaggio Sip 5-70 Convertible

Rear-facing 5 - 45 lbs.
Forward-facing 22 - 70 lbs.

Passenger Safety

RECARO

Recaro New PROSeries Seats

ProRIDE Convertible

R-F: 5-35
F-F: 20-70
Replaces Como & Signo

Recaro Euro Convertible

R-F: 5-35
F-F: 20-70
Replaces Como & Signo

ProSPORT Combo

Harness: 20-90
Booster: 30-120
Replaces Young Sport

Passenger Safety

RECARO

Recaro New PROSeries Boosters

ProBooster

30-120

Vivo Booster

30-100

Passenger Safety

AgriLIFE EXTENSION

Summer

Infant Seat

Prodigy

4-32 Lbs.
Up to 32”

- Smart Screen Technology - clear, step-by-step instructions to click, level and tighten the base properly.
- Easy-to-use belt-tightening system ensures a tight fit.
- SafeGuard® 1Adjust™ automatic height and harness adjustment allows for a fast and snug fit with one hand with no rethread harness.

Passenger Safety

AgriLIFE EXTENSION

Inflatable Booster Seats

Bubble Bum

33-79 lbs.

goBooster

40 and 80 lbs.

Passenger Safety

AgriLIFE EXTENSION

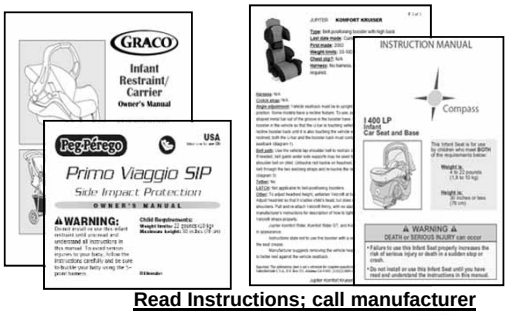
Finding Answers

- Have a question or notice a possible problem?
  - Check the child restraint Owner's Manual
  - Contact the child restraint manufacturer
- Caregiver empowerment
  - Teach the caregiver where and how to find the answers

Learn More about New Seats

- Field trip! Check out the latest models in person.
- Use the manufacturers' websites.
- Call/email manufacturer's customer service.
  - Many have techs on staff who speak your language

When in Doubt, Check It Out!



Read Instructions; call manufacturer

Questions and Answers